FEDERATED MALAY STATES.

ANNUAL REPORT

OF THE

MEDICAL DEPARTMENT

FOR THE YEAR

1926

BY

DR. R. DOWDEN.
Principal Medical Officer, F.M.S.

KUALA LUMPUR:
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FEDERATED MALAY STATES.

ANNUAL REPORT OF THE MEDICAL DEPARTMENT FOR THE YEAR ENDING 31ST DECEMBER, 1926.

ADMINISTRATION.

STAFF.

1. The total authorized staff of the Medical Department, Federated Malay States, including all branches on the 31st December, 1926, was 1,049. It is divided as follows:

Hospital Branch	853
Health Branch	82
Institute for Medical Research	37
Central Mental Hospital	34
Veterinary Branch	32
Venereal Disease Branch	5
Radiological Branch	6
Total ...	1,049

The following were the principal changes which took place during the year:
Dr. R. Dowden, Principal Medical Officer, proceeded on leave on 10th April, 1926, and Dr. A. R. Wellington, Senior Health Officer, acted for him until 14th November, 1926, when he went to Australia to attend the Conference on Health Conditions in the Pacific.

Dr. A. K. Cosgrave, Senior Medical Officer, Selangor, acted as Senior Health Officer from 10th April, 1926, until the end of the year.

Dr. W. H. Hart, Acting Senior Medical Officer, Pahang, was transferred to Selangor and acted as Senior Medical Officer, Selangor, from 10th April, 1926, until the end of the year.

Dr. H. R. Dive, Medical Officer, acted as Senior Medical Officer, Pahang, from 10th April, 1926, until the end of the year.

Dr. William Fletcher, Bacteriologist, proceeded on leave on 21st January, 1926, and Dr. A. N. Kingsbury, Pathologist, acted for him until 7th June, 1926.

Dr. A. T. Stanton, Director of Government Laboratories, proceeded on one month's leave on 2nd July, 1926, and was appointed Chief Medical Adviser to the Colonial Office, with effect from 11th August, 1926, and Dr. Fletcher, Bacteriologist, acted for him during the period and was appointed Director of Government Laboratories on 11th August, 1926.

APPOINTMENTS.

During the year, the following officers were appointed:

Dr. W. H. Hart as Senior Medical Officer, Pahang, on 31st August, 1926.
Dr. R. M. Dannatt as Acting Chief Surgeon, Selangor, on 5th March, 1926.
Dr. G. D. Gordon as Medical Officer on 5th March, 1926.
Dr. E. C. Chitty as Medical Officer on 6th March, 1926.
Dr. J. J. O'Grady as Medical Officer on 11th March, 1926.
Dr. F. G. Greenwood as Medical Officer on 25th March, 1926.
Dr. D. W. G. Faris as Medical Officer on 25th March, 1926.
Dr. E. A. Struthers as Medical Officer on 25th March, 1926.
Dr. P. J. Mulcahy as Medical Officer on 25th March, 1926.
Dr. J. G. Castellain as Health Officer on 17th May, 1926.
Mr. K. D. Turner as Veterinary Surgeon on 24th April, 1926.

Dr. (Miss) Ivy Collier as Lady Medical Officer on 22nd May, 1926.

Dr. R. T. B. Green was appointed to act as Assistant Bacteriologist on 27th March, 1926.

Dr. A. N. Kingsbury was appointed Professor of Bacteriology, College of Medicine, Singapore, on 30th May, 1926.

Capt. K. B. Williamson was appointed Professor of Biology, College of Medicine, Singapore, on 24th September, 1926.

Dr. C. C. Taffs as Medical Officer on 13th August, 1926.

Dr. T. C. Wakefield as Medical Officer on 14th August, 1926.

Dr. B. D. Merrin as Medical Officer on 14th August, 1926.

Mr. B. A. R. Gater of the Agricultural Department was appointed as Malaria Research Officer on 1st November, 1926.

Dr. (Mrs.) Whyte was appointed as Lady Medical Officer on 1st December, 1926.

Resignations and Retirements.

Dr. W. F. Macdonald retired on 21st April, 1926, on medical grounds.

Dr. B. Cross engagement expired on 25th May, 1926.

Dr. V. M. Matthews engagement expired on 3rd July, 1926.

Dr. (Miss) Ivy Collier retired on 20th November, 1926, on medical grounds.

Dr. P. J. Mulcahy resigned on 27th December, 1926.

Dr. I. P. Masters, Senior Medical Officer, Pahang, retired on medical grounds on 30th August, 1926.

Capt. F. Golding, Financial Secretary to the Senior Medical Officer, Perak, was granted eight months' leave on 10th October, 1926, prior to retirement.

Death.

I regret to record with deep regret the death of Dr. J. G. Dunlea, Medical Officer, on 14th September, 1926.

ASSISTANT SURGEONS.

Appointments.

The following Assistant Surgeons were appointed during 1926:

Mr. J. Samuel, Assistant Surgeon, on 9th April, 1926.

Mr. Thiam Hock Wee, Assistant Surgeon, on 1st June, 1926.

Mr. K. Natarajan, Assistant Surgeon, on 1st July, 1926.

Mr. V. M. Balakrishna Pannikar, Assistant Surgeon, on 11th July, 1926.

Mr. G. S. Venkatesan, Assistant Surgeon, on 11th July, 1926.

Mr. Ooi Kheng Seng, Assistant Surgeon, on 15th September, 1926.

Mr. P. Kumara Menon, Assistant Surgeon, on 29th October, 1926.

Promotions.

The following were promoted to Deputy Medical Officers during 1926:

Mr. G. Abraham as Deputy Medical Officer on 1st November, 1926.

Mr. E. J. de Cruz as Deputy Medical Officer on 1st November, 1926.

Mr. K. N. Ghosh as Deputy Medical Officer on 1st November, 1926.

Mr. M. Gupta as Deputy Medical Officer on 1st November, 1926.

Mr. A. Ponniah as Deputy Medical Officer on 1st November, 1926.

Mr. S. Danasamy as Deputy Medical Officer on 1st November, 1926.

Mr. A. Saravanamuthu as Deputy Medical Officer on 1st November, 1926.

Mr. R. Vythilingam as Deputy Medical Officer on 1st November, 1926.

Mr. Abdul Latiff as Deputy Medical Officer on 1st November, 1926.

Mr. V. Supramaniam as Deputy Medical Officer on 1st November, 1926.

Mr. A. E. Doraisamy as Deputy Medical Officer on 1st November, 1926.

Mr. A. Viswalingam as Deputy Medical Officer on 1st November, 1926.

Resignation.

Mr. P. Nadarajah, Assistant Surgeon, resigned on 17th June, 1926.

NURSING SISTERS.

APPOINTMENTS.

Miss E. Augarde, Nursing Sister, on 19th June, 1926.
Miss E. G. Hill, Nursing Sister, on 10th July, 1926.
Miss D. Matthews, Nursing Sister, on 16th July, 1926.
Miss M. T. O'Sullivan, Nursing Sister, on 29th July, 1926.
Miss D. M. Hansford, Nursing Sister, on 7th August, 1926.
Miss M. C. Cox, Nursing Sister, on 26th August, 1926.
Miss M. J. Teale, Nursing Sister, on 26th August, 1926.
Miss M. Duncan, Nursing Sister, on 25th September, 1926.
Miss C. M. Saunders, Nursing Sister, on 7th October, 1926.
Miss M. Grice, Nursing Sister, on 16th October, 1926.
Mrs. C. Wilson, Nursing Sister, on 16th October, 1926.
Miss R. E. Yeomans, Nursing Sister, on 16th December, 1926.
Miss F. L. Webb, Nursing Sister, on 31st December, 1926.

PROMOTIONS.

Miss M. E. Fisher, promoted to Matron, Grade II, on 23rd December, 1926.

RETIREMENT.

Miss L. M. Jacobs, Matron, Grade II, retired on pension on 23rd December, 1926.

RESIGNATIONS.

Miss E. H. McIlrath, Nursing Sister, engagement expired on 6th January, 1926.
Miss S. Smith, Nursing Sister, engagement expired on 17th April, 1926.
Miss E. Lampard, Nursing Sister, resigned on 18th May, 1926.
Miss E. M. McDougall, Nursing Sister, resigned on 10th June, 1926.
Miss D. M. Hodgson, Nursing Sister, resigned on 19th June, 1926.
Miss M. Kaylor, Nursing Sister, resigned on 24th November, 1926.
Miss E. L. Crocker, Nursing Sister, resigned on 30th November, 1926.

2. The Health and Hospital Branches were both understaffed by some fifty per cent. during the year. Taking this fact into consideration the staff are to be congratulated on the amount of work done, and as the duties of the department have increased in every direction, and 1926 was an exceptionally unhealthy year, the work of the department was carried out under great difficulties.

It is hoped that the new appointments in the Health Branch and the special allowance to those who hold the Diploma in Public Health qualification, together with the increased initial pay in the Medical Branch, a greater number of recruits will be forthcoming in 1927.

ENACTMENTS.

3. List of Enactments affecting Public Health enacted during the year:

"The Health Boards Enactment, 1926," was passed during the year and comes into force on 1st January, 1927. This Bill, which is the outcome of the Estates Health Commission, is an attempt, made for the first time, to organise the health work on large and small estates on a sound basis. It ought to result in a higher standard of both preventive and curative work and better estate hospitals.

FINANCIAL.

(*a*) Statement of Revenue for the year 1926—		
Revenue (Hospital fees, licences, etc.) ...	$	374,080
(*b*) Statement of Expenditure for the year 1926—		
Personal Emoluments and Other Charges ...		4,115,518
(*c*) The Estimated Revenue for the Federated Malay States for the year 1926 is		81,043,259

PUBLIC HEALTH.

(*a*).—GENERAL REMARKS.

4. The general health of the country was not satisfactory during the year under review, the death-rate being 29.22 per mille as against 23.60 for the previous year. This was due to a very great extent to the epidemic of malaria which swept over the country during the months of April, May, June, July and August. In some districts it was much more severe than in others. An increased virulence in the type of the disease was observed. Exceptionally heavy rains at the end of 1925 followed by a prolonged drought, and the increased amoust of clearing jungle land which followed the rise in the price of rubber may have been important contributing factors.

5. Various theories have been advanced by Government and privately employed medical men to account for this.

One group holds that waves of virulent malaria are to be expected every ten years or so, but this is also more or less true of exceptional rains. Others consider that the great increase in the number of imported Tamil labourers from India introduced a great number of and a more virulent type of parasites. The majority of the cases were *P. falcparum* and *P. vivax* infections, and no differences in the forms seen under the microscope are reported. It seems probable that the main factors were the floods and heavy rains, the silting of the water courses throughout the country which prevents flood water flowing off, and causes a rise in the sub-soil water level which lasts for a long period. The sub-soil water forming many new seepage areas and breeding places, while the increase in the Indian labouring population may have increased the supply of gametocytes. However the incidence of malaria was universal throughout the Federated Malay States and occurred in many places where there had been no influx of new labourers.

6. None of these theories are capable of absolute proof but many new breeding places were found in Kuala Lumpur by the Health Officer, Dr. Black and his staff, after the rains, and it is not unreasonable to suppose that there were similar happenings elsewhere.

7. During the year the anti-malarial measures were in no way relaxed and the distribution of quinine was carried out as usual.

8. Tablets of quinine to the number of 1,043,200 were issued to the various Health Officers for ultimate free distribution to the public through the Police, the Education Department and the District Officers, also to the Senior Medical Officers for distribution through the various travelling dispensaries.

9. Lectures, lantern demonstrations, notices in all languages, and anti-malaria propaganda was vigorously carried out by the Public Health Education Committee.

10. Much remains to be done, as an example of this one may quote the case where after a lecture, the lecturer having displayed various forms of quinine, one of his audience a Malay said to him:

"What you say may be all very well but we know that the quinine you have shown us is made from the ground up bones and livers of dead men."

11. The end of the year was remarkable for rains and floods more universal and heavier than those occurring at the end of 1925 and beginning of 1926, and 1927 may show little or no improvement so far as malaria is concerned.

(*b*).—COMMUNICABLE DISEASES.

12. *Malaria.*—There were 38,633 cases treated in hospitals with 1,792 deaths and a death-rate of 4.64 as compared with 23,056 cases with 993 deaths and a death-rate of 4.03 for the year 1925.

13. *Blackwater Fever.*—There were five cases of blackwater fever with one death. They occurred in the State of Negri Sembilan.

14. *Dysentery and Diarrhoea.*—The total number of cases treated in hospitals was 6,254 with 1,149 deaths and a death-rate of 18.37 per mille as against 4,081 with 638 deaths and a death-rate of 15.63 for 1925. The types were as follows:

States.	Amoebic.	Deaths.	Bacillary.	Deaths.	Diarrhoea.	Deaths.
Perak	899	137	915	218	1,389	190
Selangor	354	68	674	180	796	113
Negri Sembilan ...	318	75	278	82	228	23
Pahang	71	14	179	31	153	18
Total ...	1,642	294	2,046	511	2,566	344

15. The year under review was a bad one for bowel complaints. The increase was due probably to chills and privations due to the floods and heavy rains and possibly to contamination of rivers and wells from the same cause. The increase of Indian immigrants bringing women and children of poor stamina with them was also a possible factor.

16. *Venereal Diseases.*—The total number of cases treated in hospitals during the year 1926 was 4,428 cases with 51 deaths and a death-rate of 1.15 per cent. as compared with 3,688 cases with 91 deaths and a death-rate of 2.46 for the previous year.

The campaign against venereal diseases continues with marked success. Persons of all nationalities seek advice and treatment at the Clinics, which are being increased in number.

17. The figures given in the attached report by the Venereal Diseases Specialist speak for themselves, but his most remarkable achievement has been winning the confidence of the three hundred and sixty Chinese known prostitutes living in Kuala Lumpur. They attend regularly at the Clinic and seek advice on other conditions besides venereal diseases. It is impossible for anyone not knowing the Chinese to realize what the Venereal Diseases Specialist has accomplished.

18. Injections of arsenical compounds are given at all hospitals and dispensaries. The following are the figures for the different States:

States.	1924.	1925.	1926.
Perak	14,217	15,913	11,863
Selangor	10,525	9,581	4,845
Negri Sembilan	3,244	3,091	2,790
Pahang	2,030	2,068	2,984
Total ...	30,016	30,653	22,482

19. *Pulmonary Tuberculosis.*—The number of cases treated in hospitals during the year under review was 2,329 cases with 995 deaths and a death-rate of 42.72 per mille as compared with 2,571 cases with 1,051 deaths and a death-rate of 40.88 per mille for the year 1925.

20. Extensive propaganda in the form of pamphlets was continued by the Public Health Education Committee.

21. There is no doubt that influenza leaves Asiatics very liable to infection by the tubercle bacillus and as influenza is more common that it was, so tubercle bacillus infections increase. The floods with the exposure and privations were responsible to some extent for the increase death-rate and number of cases. Overcrowding in the towns is also largely a factor. A Commission has recently sat on the question of housing—the report is not yet available. It is impossible to persuade early cases to come into or to remain in hospital. They do not feel seriously ill and all they wish for is "a bottle of medicine". Asiatics will not sacrifice their chances of money making for the possible cure of a disease which they do not believe they have. The Government Asiatic Staff are all periodically examined for symptoms of pulmonary or other tubercular infection.

22. *Yaws.*—The treatment of yaws by arsenical compounds was continued. A total number of 30,233 injections were given during the period under review. The number of cases treated in each State in comparison with the number treated in 1923, 1924 and 1925 is shown in the following table:

States.	1923.	1924.	1925.	1926.
Perak	14,149	9,884	9,155	9,358
Selangor	4,381	2,231	1,305	1,680
Negri Sembilan	9,358	7,267	6,426	4,543
Pahang	3,247	3,997	9,403	7,893
Total ...	31,135	23,389	26,289	23,747

23. The difficulty experienced in persuading patients, who are mostly Malays, to continue injections is still very great, but by making facilities for injections as easy as possible it is hoped that yaws will be eventually eradicated. Serious cases so common a few years ago are rarely seen and the milder cases are becoming less frequent. In some districts where some years ago the disease was common it is no longer seen, but fresh centres of infection crop up from time to time. There is also danger of infectious cases coming in from the neighbouring States of Trengganu and Kedah over the extensive land frontiers against which it is impossible to guard. In the course of time yaws may disappear from the Federated Malay States but unceasing vigilance will be needed.

24.—*Leprosy.*—There were 480 fresh admissions and 66 deaths from this disease during the year.

25. *Infectious Diseases.*—There were no epidemics during the year, except one small outbreak of cholera and some cases of measles.

26. *Typhus Fever.*—Sixty cases of tropical typhus were diagnosed at the Institute for Medical Research during the year, thirty-two belonging to the K. group and twenty-eight belonging to the W. group. A special resume of the Institute Report is given.

27. *Cholera.*—A small outbreak of this disease occurred in the Kuala Langat district of Selangor, there being 13 cases and six deaths. A possible cause of infection was from one of a family who had arrived from India two months previously on an infected ship. These coolies, the parents of one child, had been inmates of the non-infectious hospital of the Quarantine Camp. It may be possible that a member of this family was an intermittent carrier.

Three cholera contacts escaped from the Quarantine Camp led by persons who had been previously in this country. They more probably carried the disease, which was further spread by labourers absconding from Permatang Estate lines.

28. *Enteric Fever.*—There were 147 cases treated in hospitals with 26 deaths during the year as compared with 116 cases and 34 deaths for the corresponding period of 1925.

States.	Cases.	Deaths.
Perak	37 ...	7
Selangor	55 ...	7
Negri Sembilan	39 ...	7
Pahang	16 ...	5
Total ...	147 ...	26

The remarks of the Director of Government Laboratories are quoted elsewhere.

29. *Diptheria.*—There were 35 cases diagnosed at the Institute for Medical Research during the year.

30. *Influenza.*—Influenza has been more prevalent during the year under review. There were 5,405 cases with 74 deaths as against 4,437 cases and 44 deaths in 1925.

31. *Pneumonia.*—The number of cases treated was 2,066 with 1,202 deaths and a death-rate of 45.09 as against 1,922 cases with 779 deaths and a death-rate of 40.52 for the year 1925. Here again the rains, floods and increase in the labouring Indian population are responsible for the increase in the cases and death-rates.

Influenza is also a factor, and the Indian labourer is very prone to contract pneumonia and has a low degree of resisting power.

32. As soon as conditions permit it is hoped to introduce female nursing in the acute male wards of the Asiatic hospitals. This should reduce the hospital death-rate from pneumonia but the difficulty is to find suitable recruits, and sooner or later nearly all the Asiatic Nurses marry and we lose them just as they complete their training.

33. *Smallpox.*—There has been no outbreak of smallpox during the year under review, and vaccination work was mostly confined to children. The number of vaccinations performed was 113,914 as compared with 126,305 for the corresponding period of last year. They were distributed as follows:

States.	1923.	1924.	1925.	1926.
Perak	53,926 ...	54,278 ...	86,125 ...	88,539
Selangor	11,075 ...	11,745 ...	26,369 ...	14,256
Negri Sembilan	6,366 ...	6,563 ...	8,268 ...	5,392
Pahang	6,357 ...	5,821 ...	5,543 ...	5,727
Total ...	77,724 ...	78,407 ...	126,305 ...	113,914

34. *Beri-Beri.*—The number of cases treated for this disease was 1,075 with 140 deaths and a death-rate of 13.02 as compared with 906 with 98 deaths and a death-rate of 10.81 for the corresponding period of 1925.

Very active propaganda work in the form of pamphlets and advertisements in the vernacular press warning the public of the danger of using polished rice were issued by the Committee for Public Health Education.

35. There was a marked increase in number of cases treated in Pahang during the year, most of them came from the Railway Construction area north of Chegah Perah and from mining areas near Bentong and Raub. Many Chinese coolies seem to keep themselves on the border line of health and any serious interference with their food supply soon brings on an attack of beri-beri; there was a large increase in the number of cases as a result of the floods at the end of the year.

They are also very unwilling to go into hospital, even when they recognise that they are ill, when money is to be made and the price of tin is high. In spite of all efforts the use of polished rice is increasing and the population will not use undermilled rice.

Rice polishing extract still holds its own against marmite and other treatments, but all are useful.

HELMINTHIC DISEASES.

36. *Ankylostomiasis.*—A total of 2,493 cases were treated in 1926 as compared with 3,309 cases in 1925. These figures are for cases who were treated for these diseases only. In various districts, campaigns against this and other intestinal parasites are conducted and efforts are made to improve rural sanitation generally. As soon as staff are available a more general effort throughout the Federated Malay States will be made.

The Public Health Education Committee has carried on propaganda by means of pamphlets.

37. *Ascaris lumbricoides* is almost a universal infection. It has caused death in adults, and in children of all ages is a serious condition untreated, to quote one other form of disease alone.

38. The demands made for medicine for worms at the out-door centres and travelling dispensaries are very numerous and refer almost entirely to *Ascaris* infections as other worms if passed are seldom noticed.

(*c*).—VITAL STATISTICS.

39. Births and deaths figures are obtained from notifications compulsory under the registration of Births and Deaths Enactment which is everywhere in force. The total number of births and deaths is approximately correct. The accuracy of diagnosis as to cause of deaths is in the majority of cases open to question, for few of the cases were seen by a qualified medical man previous to decease. In each of the four large towns, every uncertified body is viewed by the Assistant Health Officer who interrogates the friends and forms a diagnosis so far as possible. In rural districts, these duties are carried out by the Police.

40. Deaths in towns are debited against the town only if the deceased was resident there for three months or more previous to death. The towns contain hospitals which cater both for the town and the district surrounding it. It is a well-known fact that chronic cases from the rural areas drift to the towns in the hope of getting more skilled treatment usually at the last moment. Taking all things into consideration even with a qualifying period of three months a number of deaths are debited against the towns which should be debited against the rural areas where the diseases were contracted.

41. Because of the peculiar age and sex distribution, and the fact that the labour of this country is largely made up of persons aged 20 to 45, who passed the doctor before embarking for Malaya, the death figures cannot be compared with countries where the labour is indigenous and where age and sex distribution are normal.

42. In the case of Chinese immigrants no medical examination is made before they leave China but they are usually able-bodied young bachelors.

43. *Population.*—The population of the Federated Malay States as estimated was at the end of June, 1926, 1,476,032, distributed as follows:

Perak	654,179
Selangor	457,170
Negri Sembilan	204,257
Pahang	160,426

Assuming that the races remain in the same proportion as in the Census year the race distribution is as follows:

Europeans and Americans	6,947
Eurasians	3,495
Malays and other natives of the Archipelago	558,060
Chinese	526,733
Indians	374,915
Others	5,882

44. Owing to the unprecedented severity of the floods which occurred and which were particularly severe in Pahang resulting in the complete destruction of the records of the Registrar of Births and Deaths in that State, the figures given for births and deaths are for the States of Perak, Selangor and Negri Sembilan only.

45. *Births.*—The number of births registered was 39,834 for the whole year, giving a rate of 30.28 (excluding Pahang) per mille of population as against a birth-rate of 28.89 per mille for 1925.

The following table shows the number of births and birth-rates according to races:

Race.	Number of births.	Birth-rate.
Europeans and Americans	131 ...	19.86
Eurasians	127 ...	37.76
Malays and other races of the Archipelago ...	17,522 ...	39.12
Chinese	12,973 ...	26.61
Indians	9,010 ...	24.68
Others	71 ...	13.67

46. *Deaths.*—Thirty-eight thousand four hundred and forty-five deaths were registered, giving a death-rate of 29.22 (excluding Pahang) per mille. The number of deaths in 1925 was 34,153 and the rate was 23.60 for the whole Federated Malay States.

47. It is probable that the introduction of more female Tamil labourers bringing with them children of poor physique, and malaria, dysentery and diarrhoea following the heavy rains and floods may account for the increase.

The distribution of deaths among the several races was as follows:

Race.	Number of deaths.	Death-rate.
Europeans and Americans	36 ...	5.46
Eurasians	46 ...	13.68
Malays and other races of the Archipelago ...	11,657 ...	26.03
Chinese	14,730 ...	30.22
Indians	11,920 ...	32.64
Others	56 ...	10.78

INFANT MORTALITY.

48. The number of deaths of children under one year was 7,718 or an infantile mortality rate per thousand births of 193.75 against a mortality rate of 177.17 in 1925. This death-rate which it is hoped will be reduced in the course of time, compares favourably with those of other tropical countries. The death-rates for the three States were:

States.	Deaths of children under one year.	Death-rate per 1,000 births.
Perak	... 3,459 ...	172.13
Selangor	... 2,888 ...	207.56
Negri Sembilan	... 1,371 ...	225.36
Pahang (Figures not available owing to floods)		

49. The infantile mortality rate in Negri Sembilan still remains the highest, but it is hoped that with the further extension of Infant Welfare work to reduce this in the near future.

(*d*).—GENERAL EUROPEAN POPULATION.

50. The general health of the European population continues to be good. There was little sickness and invaliding. The total European and American population as estimated at the end of June, 1926, was 6,947. There were 131 births, giving a birth-rate of 19.86 per mille and 36 deaths with a death-rate of 5.46 per mille as compared with a birth-rate of 20.72 per mille and a death-rate of 4.03 per mille in the previous year.

51. It is necessary to remark upon the increasing number of cases of neuresthenia, Europeans of both sexes being affected. There is no doubt that in the case of many men the cause is the increase in the amount of work to be done, the monotony of the climate and of the life, in spite of recreations unknown in the past, and perhaps the tendency to burn the candle at both ends, stay up half the night and work all day. In most stations the daily routine is the same and the members of the clubs do not change. Small worries become great ones only too easily, often

with the most disastrous results. In the case of European women lack of definite occupation and the straining after amusement and excitement are often to blame, but the climate does not suit a good many ladies. It is possible that were the fourteen days casual leave now available yearly extended to a month things might improve. It is to be hoped that when the Cameron's Highlands Hill Station is an accomplished fact conditions will be altered.

SANITATION.

52. The Health Branch is still understaffed; of the authorised senior staff of one Senior Health Officer, 15 Health Officers and eight Chief Sanitary Inspectors, only six Health Officers and six Medical Officers seconded to the Health Branch, and two Chief Sanitary Inspectors were available. One of the latter on his return from leave at the end of February, 1926, was stationed at Tapah to supervise the anti-malarial works in connection with the road to Cameron's Highlands which is to be developed into a Hill Station.

53. Of the 28 Sanitary Inspectors eight of them were absent in Singapore for six months undergoing a course preparatory to taking the examination for the Royal Sanitary Institute certificate which certificate must be held before an Inspector can be promoted to the higher grades. Their services were not available to the branch from May until November.

INSPECTION OF SCHOOLS.

54. The inspection of schools is still being carried out by both Medical and Health Branches of the Department. Frequent visits are being paid to the schools near the main roads by the travelling dispensaries. All schools are supplied with a stock of quinine tablets.

55. Dental caries is largely prevalent and more attention should be paid to the feeding of children. The food stalls in schools are often untidy and the food unwholesome. Food vendors and hawkers should be prohibited as far as possible. As previously reported latrine accommodation and water supply are very unsatisfactory in a number of schools. School inspection, especially the medical inspection of school children, will never be satisfactory until a staff of medical school inspectors, male and female, are appointed. A whole time school dentist has also been asked for.

56. It is necessary to note that in the matter of sanitation all this department can do is to recommend improvements to the Education authorities, and it is for the Education and the Public Works Departments to carry out the necessary alterations. The staff have done their best to carry out these inspections but both branches are much under strength and many schools are far from the beaten tract and the time to visit them cannot be found.

57. The work under the Labour Code was satisfactory in view of the number of staff. Of 1,450 estates, 725 were visited by Health Officers and of 156 estate hospitals 154 were visited. With the improved conditions in this branch recruits ought to be forthcoming. Further details of the work of the Health Branch will be found in the Senior Health Officer's report annexed.

PUBLIC HEALTH EDUCATION.

58. The Public Health Education Committee met on several occasions during the year; at Horticultural Shows exhibitions were put up which were well attended, lectures were given and pamphlets which had been prepared by the Committee were distributed in large numbers in various languages.

59. Popular lectures on malaria were given in Malay and Chinese in various parts of the country, these were illustrated by lantern slides and were well attended.

60. A cinematograph film of the work done at the Infant Welfare Centre, Kuala Lumpur, was also exhibited on several occasions to large and interested audiences. The film was photographed and produced by Mr. Hoflin, Secretary of the Infant Welfare Advisory Board.

61. Lectures on venereal diseases, illustrated by lantern slides, were given in Chinese, Tamil and other Clubs and Institutions.

QUARANTINE AND PORT HEALTH WORK.

62. A very marked increase of immigrants, 99,066 for 1926 compared with 48,748 for 1925, taxed the accommodation at Port Swettenham Quarantine Camp somewhat severely, in view of the fact that several successive steamers arrived infected with cholera. The situation was satisfactorily dealt with by the Quarantine Camp Staff. Improvements in the Camp will be effected in 1927 and absconding made more difficult.

63. During the year 75 ships with immigrant labourers were boarded and inspected. The labourers were landed at the Quarantine Camp. Of the 75 ships, 21 were infected—eight with cholera, two with cholera and smallpox, four with smallpox, one with cerebro-spinal meningitis, one with cholera and cerebro-spinal meningitis and five with chickenpox.

64. The number of immigrants who entered the Quarantine Station, Port Swettenham, was 99,089, the number remaining on 31st December, 1925, was 1,408, making a total of 100,497. The largest number on any one day was 7,713 on the 20th of June. The following table shows how these immigrants were distributed:

Discharged to Depôt	98,184
Transferred to Klang Hospital	104
Absconded from the Quarantine Camp	55
Died in Hospital and Cholera Wards	457
Remaining on 31st December, 1926	1,697
Total ...	100,497

The total number of persons removed to the Camp from cholera infected ships was 15,061, of these 157 either developed cholera or had the disease on admission to the Camp, 39 cases remained on 31st December, 1926. Of the 196 treated 79 died giving a percentage of 40.31.

65. Every precaution was taken to cut short the course of the epidemics. Prophylaxis by anti-cholera inoculations, and essential oils were adopted, and I think with success, as shown by the figures, 157 cases with 15,061 contacts.

66. Pneumonia are not uncommon amongst the immigrants. They seem to be largely due to defective ventilation arrangements between decks. Unfortunately two new ships, in which special precautions were adopted as regards ventilation and sanitation, having been taken by the Government of India as transports for troops to China.

INFANT WELFARE WORK.

67. Infant Welfare work continues with great success and the attendance at the Clinics have greatly increased. The number attending Clinics in Kuala Lumpur, Ipoh, Taiping and Seremban for 1925 and 1926 were as follows:

Place.	1925.	1926.
Kuala Lumpur	23,134 ...	29,831
Ipoh	15,523 ...	14,080
Taiping	18,259 ...	13,559
Seremban (opened in August, 1926) ...	— ...	3,895
Total ...	56,916 ...	61,365

68. It is interesting to note the change that has taken place in the attitude of the parents towards the aim and object of the Centre. They were originally full of fears and prejudices and attended only after much persuasion and in a very hesitating manner; they vouchsafed no signs of approval or otherwise at the instructions given them and appeared completely mystified and far from happy. To-day on visiting the Centre one can see for oneself that these same people are now thoroughly at home and have lost their fears, their attendance weekly is regular and they bring not only their own babies but persuade their neighbours to bring theirs; they demand instructions saying "please tell me about the feeding", they occasionally even ask for the instructions to be written in case they forget them. Such change of attitude is due in a large measure to time, helped no doubt by the fact that they have grasped a clearer idea of the aim and object of the work, and thus realise their responsibility with regard to the welfare of their children.

District visiting is being carried out as much as possible. It is recognised as the most important part of child welfare service and the work done in this direction has been exceptionally good through the year.

69. The reports of the Lady Medical Officers, Infant Welfare Centres, are appended.

HOSPITALS, DISPENSARIES AND VENEREAL DISEASES CLINICS.

70. *Hospitals.*—The number of in-patients treated in hospitals was 127,332 with 9,178 deaths and a death-rate of 7.21 as compared with 103,762 with 6,964 deaths and a death-rate of 6.71 in 1925. The distribution of patients in the different States was as shewn below:

States.	1925. Cases.	1925. Deaths.	1925. Death-rate.	1926. Cases.	1926. Deaths.	1926. Death-rate.
Perak	46,551	3,198	6.87	56,909	3,970	6.98
Selangor	34,768	2,172	6.24	40,464	2,904	7.17
Negri Sembilan ...	14,684	1,090	7.04	19,400	1,615	8.32
Pahang	7,759	504	6.49	10,559	689	6.52
Total ...	103,762	6,964	6.71	127,332	9,178	7.21

71. The principal diseases commonly treated in hospitals were malaria, venereal diseases, ankylostomiasis, dysentery, diarrhoea, beri-beri, pneumonia and pulmonary tuberculosis.

The following table shows the number of cases and deaths during the years 1925 and 1926.

Diseases.	1925. No. of cases.	1925. No. of deaths.	1925. Percentage of deaths.	1926. No. of cases.	1926. No. of deaths.	1926. Percentage of deaths.
Malaria	23,056	993	4.03	38,633	1,792	4.64
Venereal diseases ...	3,688	91	2.46	4,428	51	1.15
Ankylostomiasis ...	3,309	190	5.74	2,493	120	4.81
Dysentery	2,694	549	20.38	3,848	852	22.14
Diarrhoea	1,387	89	6.41	2,566	344	13.41
Beri-beri	906	98	10.81	1,075	140	13.02
Pneumonia ...	1,922	779	40.52	2,666	1,202	45.09
Pulmonary tuberculosis	2,571	1,051	40.88	2,329	995	42.72

72. *Womens' Hospitals and Wards.*—The work in womens' hospitals and wards is increasing and there has been a gratifying increase in the number attending for confinement. The number of patients treated in Kuala Kangsar Hospital during the year was 1,776 an increase of 516 of the previous year. It is very unfortunate that the records and books were lost or damaged in the flood at the end of the year in view of the considerable increase in the number of both in-door and out-door patients that demonstrated the growing readiness of Malays to make use of this hospital.

The hospital was flooded on December 30th, some of the houses being completely submerged. The water rose to a height of ten feet in the wards. The consequent damage and loss in respect of hospital property especially in the case of books and papers was considerable. All the patients had to be evacuated and were removed eventually to Taiping.

73. *The Maternity Ward.*—The success of the new maternity ward in its first full year is the most interesting feature of the report of the Lady Medical Officer, Kuala Kangsar. It has been rare for any of the six beds to remain long unoccupied, the number of labour cases treated being 86 an increase of 24 on the number for 1925. This does not include premature labours or cases admitted for complication after the birth of the child.

74. *The Malay Ward, Kuala Kangsar.*—The popularity of the hospital with Malays has doubtless been raised owing to the confidence shewn by His Highness the Sultan of Perak in allowing his wife the Raja Perempuan to be admitted as a patient for operation. She made an excellent recovery.

75. There was a decided increase in the number of children and babies treated. It is very satisfactory that, in many cases, mothers shewed their confidence in the treatment by leaving their children entirely to the care of the hospital. The fact that mothers seem no longer insistent on accompanying their children has made the Lady Medical Officer consider the establishment of a children's ward to be a practical possibility in the future. The addition of a European Sister to the staff has noticeably raised the standard of nursing in this hospital.

76. In other hospitals where Lady Medical Officers are stationed the work has been most satisfactory and these ladies have added greatly to the numbers of Asiatic women admitted for confinements. The Lady Medical Officers are excellent at general work as well as at maternity.

Practically every hospital now has its labour ward and room and Asiatic midwife to assist the qualified staff.

SURGERY.

77. *Operations.*—The number of operations undertaken during the year is shewn below:

States.	Major. 1925.	Major. 1926.	Minor. 1925.	Minor. 1926.
Perak	344	443	2,229	2,691
Selangor ...	334	311	1,579	1,257
Negri Sembilan	86	98	1,618	1,680
Pahang	12	17	296	314
Total ...	776	869	5,722	5,942

The reports of the Chief Surgeons, Perak and Selangor, are attached as appendices.

There are now three highly trained and skilful surgeons available in the Federated Malay States and there are also promising juniors.

78. A glance at the lists of operations performed will show that Federated Malay States surgery is at last on a sure footing. Patients no longer go to Java and Singapore and when new operation rooms and hospitals are erected a great increase in surgical work may be anticipated. High class Asiatics are beginning to avail themselves of the surgeons knowledge.

EYE DISEASES.

79. *Out-Patients.*—The number of new cases during the year at the Eye Clinics was as follows:

	1925.	1926.
Kuala Lumpur	1,369	2,112
Ipoh and Taiping	3,097	3,740

There were a total number of 13,329 attendances as compared with 23,220 for the year 1925.

80. *In-Patients.*—One thousand three hundred and forty-one cases were admitted into hospital as compared with 1,071 cases during the year 1925. The chief diseases met with were: conjunctivitis, trachoma, gonorrhoeal-ophthalmia, ulcers and opacities of cornea, cataracts, neuroretinitis, glaucoma and injuries to cornea and eye-ball, resulting chiefly from accidents chiefly amongst the workmen in factories and metal quarries, and burns from acids and corrosives.

There are three treatment Centres, Taiping, Ipoh and Kuala Lumpur and the work is increasingly popular. The reports are attached as appendices.

CURE FOR OPIUM HABIT.

81. There is little to report this year except that the number of admissions gradually declined throughout the year until at the end there were no patients in any of the wards.

Many absconded and the great majority was discharged at their own request, of those who underwent the full course of treatment it is impossible to say how many were benefited permanently as these cases cannot be followed up once they leave hospital. The opinion is that the percentage is almost negligible.

It would appear that some came in for rest and food. Many were caught with opium in their possession and some went out to secretly smoke opium during the night.

82. I think it may now be taken that the opening of the opium wards has been a failure.

Actually the sales of opium increased every month after the opening of these wards. Six thousand patients were treated and if the cure was a success this number ought to have materially affected the consumption as far fewer Chinese smoke opium than was formerly the case.

X-RAY AND ELECTRICAL TREATMENT.

83. Dr. C. F. Constant was the Radiologist throughout the year. The figures given below show the actual number of patients treated or examined:

X-ray cases	714
Electrical treatment	209

84. A well organised X-Ray Department has been opened in Kuala Lumpur. New X-ray equipment has been installed in Ipoh and an X-ray set will be installed in Seremban in 1927.

85. The Radiological Building took a long time to mature and was very badly required. As none of the old buildings could support the new X-ray apparatus and as the old apparatus broke down beyond repair for a time the Federated Malay States had no X-rays available. The Radiologist visits Ipoh at regular intervals, and a Medical Officer with radiological experience is available for the minor examinations. Electrical treatment on modern lines is available in Kuala Lumpur and will be installed in Ipoh and Seremban as soon as apparatus is to hand. The Radiologist has been greatly hindered by breakages in transit due to bad packing in England and also to lack of instructions from the English makers as to assembling plant, a sad contrast to the business-like and thorough methods obtaining in America. A word must be said concerning the Radiologist's energy and skill in assembling and putting up the apparatus and his great knowledge as a practical electrician. His report is attached.

HOSPITALS AND DISPENSARIES.

86. *Out-Patients.*—The number of out-patients treated in all hospitals, dispensaries, travelling dispensaries and dispensary boats for 1926 was 630,052 as compared with 621,793 in 1925. The following figures show the number treated during the past four years:

States.	1923.	1924.	1925.	1926.
Perak	190,990	221,096	216,282	210,511
Selangor ...	159,402	177,896	219,739	227,864
Negri Sembilan	92,692	96,432	99,047	101,652
Pahang ...	84,329	88,837	86,725	90,025
Total ...	527,413	584,261	621,793	630,052

87. Of the total of 630,052 cases 156,652 were treated by the travelling dispensaries and 16,817 by dispensary boats on the Pahang River. In Selangor a system of house to house visits was inaugurated. The travelling dispensaries staff visited Malay kampongs which were some distance off the road and whose inhabitants would not trouble to attend at the usual stopping places of the travelling dispensary. A total of 460 patients out of a population of 3,416 was treated by these means. It is intended to extend this system as more senior Malay dressers become available.

88. In 1927 a number of new and improved type of larger travelling dispensaries are to be supplied. They are being built on a one ton Morris Chasis. They will gradually replace the fords which are becoming worn out after many years of excellent service.

89. The motor boats dispensaries are under construction one for the Perak River and one for the Pahang River. The former has now, at the time of writing, been supplied and it promises to be a great success. The design produced by the Medical Department with the aid of the Radiologist, who was for some years in the Royal Navy, has been adopted by Messrs. Thornycroft as a standard for river ambulance launches. Little was forgotten and as an ambulance launch these ten knot ships have no rivals. They will be of immense value to the Malay riverine population.

PRISONS.

90. During 1926 the general health of the prisoners has continued satisfactory. The total number treated during the year in the different gaol hospitals was 635 with 10 deaths and a death-rate of 1.57 as against 953 with 16 deaths and a death-rate of 1.69 for the year 1925. They were distributed as in the following table:

Place.	1925. Cases.	1925. Deaths.	1925. Per-centage.	1926. Cases.	1926. Deaths.	1926. Per-centage.
Pudu Gaol, Kuala Lumpur ...	158	1	0.57	125	1	0.80
Gaol, Taiping	193	6	3.11	141	7	4.96
,, Batu Gajah	273	3	1.10	178	—	—
,, Seremban	255	6	2.35	119	2	1.68
,, Kuala Lipis	54	—	—	55	—	—
,, Kuantan	20	—	—	17	—	—
Total ...	953	16	1.69	635	10	1.57

As is usual, all new prisoners are kept under observation. Their blood and faeces are examined and they are vaccinated before being passed to labour.

Dysentery which was at one time very prevalent has wholly disappeared as a result of measures taken in Taiping in 1917.

LEPER ASYLUMS.

91. *Kuala Lumpur.*—The total number of lepers treated during the year was 704 with 42 deaths and a death-rate of 5.96 per cent. as compared with 635 cases and a death-rate of 4.88 per cent. for the year 1925. A report on the working of this institution is attached as an appendix.

A feature for the work is the number of voluntary admissions and the return of escaped patients. Old and unsuitable as this settlement is, it is a credit to the officers and patients in charge.

92. *Pulau Pangkor Laut.*—In this asylum which is for Malays only 63 cases of leprosy were treated during the year. There were six deaths. The Medical Officer in charge reports that the hoped for results when the "Tai Foong Chee" treatment was introduced in 1925 were not obtained. The inmates were soon tired of this form of treatment and it was not given a fair chance. The failure, perhaps, are attributable to the extraordinary mentality of the Malay.

93. Once admitted to the asylum he makes up his mind to stay there. The Medical Officer states that during the last three years he can only point to one case, a young female, who is anxious to get well and join her people again. She alone persevered with Tai Foong Chee and E.C.C.O. and improvement in her case is marked.

94. The District Officer, Lower Perak, recently visited and remarked in the Visitors' Book that the patients are as happy as it is possible for them to be. More accommodation will be required before long in spite of that supplied already, and the island is rather too small, or shortly will be, for requirements. Marriages amongst the patients are now permitted by Government.

95. *Taiping Leper Wards.*—Eighty-eight cases were admitted during the year. Sixty-six remained at the end of 1925. There were 14 deaths in 1926. It is hoped to shortly transfer all the Taiping lepers to the Kuala Lumpur Asylum which is being extended. Only a small reception ward will remain in Taiping.

TEMPORARY CHINESE DECREPIT ASYLUM, PORT SWETTENHAM.

96. The policy is to allow this camp to decline in numbers until it is empty or transferred elsewhere. No new decrepits were admitted into this home since July, 1925, owing to want of accommodation. The number of decrepits remained on 1st January was 441 and the number remaining at the end of the year was 229. Sixteen were discharged, sixty-seven absconded, sixty-three died and sixty transferred. Chronic patients should not be in the hospitals which should be reserved for cases of acute disease. A large institution for such patients will be available in the course of time twelve miles from Kuala Lumpur where plenty of agricultural land is at disposal and where these people can be taught trades and earn some money. A site for a temporary camp near Port Swettenham is under consideration.

VETERINARY BRANCH.

RINDERPEST.

States.	Cases.	Deaths.	Destroyed.
Perak	850 ...	642 ...	—
Selangor	134 ...	1 ...	133
Negri Sembilan	1,327 ...	1,221 ...	—
Pahang	2,811 ...	2,021 ...	664
Total ...	5,122 ...	3,885 ...	797

97. In Negri Sembilan, the seriousness and extent of the outbreak was due to the fact that the areas infected were mostly Malay kampong areas where buffaloes are plentiful and predominated over cattle, with their great susceptibility and high mortality. In most cases the disease was held in check by simple quarantine measures, but success depended on the strictness with which these measures were enforced, and were obeyed. Great trouble was experienced in some districts in this direction and it was due to the lack of co-operation on the part of the public that the disease persisted for over four months.

98. In Pahang outbreaks occurred in Temerloh, Kuala Lipis, Bentong, Raub and Kuantan. The one in Raub district was most severe. The outbreak commenced in November, 1925, and lasted until November, 1926.

FOOT-AND-MOUTH DISEASE.

States.	Cases.	Deaths.	Destroyed.
Perak	85 ...	4 ...	—
Selangor	235 ...	1 ...	—
Negri Sembilan	— ...	— ...	—
Pahang	— ...	— ...	—
Total ...	320 ...	5 ...	—

99. *Rabies.*—Fourteen cases of rabies occurred in Negri Sembilan. The first case was at Johol, and cases following in the Kuala Pilah and Tampin districts. One of these cases occurring in a monkey.

Two hundred and seventy contact dogs were vaccinated with special canine rabies vaccine supplied by the Institute for Medical Research. Two vaccinated dogs developed the disease, one three days after vaccination, the other about a month later.

No cases occurred in the other States during the year.

100. *Swine Fever.*—There were no cases of swine fever reported in the Federated Malay States during the period under review.

101. *Surra.*—There were only four cases of this disease. They occurred in dogs admitted for treatment in the Animal Infirmary, Taiping, Perak, all of them were destroyed.

VETERINARY QUARANTINE STATIONS.

102. *Port Swettenham.*—Fourteen thousand one hundred and forty-nine animals were imported *via* Port Swettenham, of which number 4,224 cattle were quarantined for 10 days. Four outbreaks of rinderpest and two of foot-and-mouth disease were detected in newly imported animals. The new cattle Quarantine Station built by the Railway Department was repaired, a water supply was laid on and it was used during the latter half of the year.

103. *Kuala Lumpur.*—One thousand and five cattle were quarantined, these were chiefly animals imported from Singapore. The new cattle Quarantine Station at Bungsar Road was taken over during September, the old one at Bukit Sentul being given up. The former is more convenient as it contains a large grazing area and it is closer to the railway and abattoirs.

104. *Kuantan.*—One thousand one hundred and ninety-four animals passed through the pig Quarantine Station, Kuantan, no disease occurring.

105. *Perak.*—The following cattle were quarantined at:

Port Weld	3,297
Parit Buntar	112
Selama	307
Teluk Anson	859

106. *Negri Sembilan.*—Animals were detained in the cattle Quarantine Stations as follows: Seremban 123 cattle and 189 buffaloes, Tampin 41 cattle and 58 buffaloes and Port Dickson 163 cattle.

VETERINARY PROSECUTIONS.

107. There were a total number of 1,171 prosecutions resulting in 1,126 convictions. The fines imposed amounted to a total of $12,796. They were distributed as follows:

States.	Prosecutions.	Convictions.	Fines.
Perak	469	457	$5,663
Selangor	395	390	3,279
Negri Sembilan	109	93	2,623
Pahang	198	186	1,230
Total ...	1,171	1,126	$12,796

METEOROLOGY.

RESUME OF METEOROLOGICAL CONDITIONS IN 1926.

108. During the first half of the year the rainfall was generally below the normal, especially during January and February. The temperature was considerably above normal for the same period. A maximum temperature of 97°F was recorded in Kuala Lumpur on April 3rd and again on April 4th. This is the highest shade temperature recorded in Kuala Lumpur, the highest previously experienced being 96°F.

109. The rainfall during the period December 17th-31st was general throughout the Peninsula, and was the heaviest of which there are any records. 26th to 29th were the days of heaviest falls, especially in Pahang. At Kuantan 20 inches were recorded on the 27th, and 54 inches in the four days 26th-29th.

SCIENTIFIC.

COMMENTS ON THE ANNUAL REPORT OF THE DIRECTOR, GOVERNMENT LABORATORIES, F.M.S.

110. This report is full of matters of the greatest interest and a few words drawing attention to the most salient features may be of interest.

111. *"Plasmochin"*.—Experiments were conducted with a quinine substitute named "Plasmochin" a German preparation manufactured by the Farbenindustrie Aktiengesellschaft at Leverkusen. It was found to be effective in benign tertian and quartan infections and destructive to all the sexual forms of parasite in the blood, but to have very little effect on subtertian parasites. In using it very careful microscopical work and frequent examinations are necessary. There is also some question as to its toxinity not yet settled. It is therefore not suitable for general use and distribution. In fact Messrs. Bayer recommend the use of quinine in subtertian infections in addition to "Plasmochin".

112. *Tsutsugamushi Disease, Kedani or Japanese River Fever.*—Four cases occurred amongst Europeans, of whom three were certainly infected in the Federated Malay States. The disease is not uncommon in Sumatra but only one previous case was known in the Federated Malay States. The disease is conveyed by the bite of small acarines, rather similar in form but smaller than the Autumn mite seen in England. Field rats act as the intermediate hosts. Rats make their nests in lallang and blukar and these places harbour the mite which feeds on the rat's blood but attacks man also, and many other animals. The mite is microscopic in size. One European case was fatal. A pamphlet on the prophylaxis for planters and their labourers is being prepared for distribution.

113. *Tropical Typhus.*—Sixty cases were diagnosed and of these thirty-two belonged to the "K" group or strain and twenty-eight to the "W" group. Laboratory names to distinguish slightly differing reactions obtained from otherwise apparently similar organisms. The disease is moderately common in the Federated Malay States though only recently recognised.

114. *Melioidosis.*—This fatal disease was recognised in 1926 in Indo-China, a case was found as a natural infection in a dog in the Federated Malay States, and a man also in the Federated Malay States was infected through a superficial ulcer on the leg. Until 1926 this disease had not been found outside Burma and the Malay Peninsula. In all there were four cases occurring in Kuala Lumpur. The disease is so rapidly fatal that it is impossible to say how many occurred elsewhere.

115. *Leptospirosis, Infective Jaundice.*—The organism has been passed through guinea pigs and definitely recognised. The staff have been investigating how many diseases may be caused in the Federated Malay States by *leptospiras* it is suspected that forms of this type of organisms are responsible for several.

116. *Measles.*—Dr. Neave Kingsbury conducted experiments with serum taken from the blood of convalescent measles cases. It was found that injections of this serum modified attacks of measles and conferred immunity lasting for some time.

117. *Pneumonia.*—Overcrowding amongst Police recruits was found to be responsible for an attack of pneumonia.

Overcrowding in the same barracks had previously caused outbreaks of cerebro-spinal meningitis in other years.

118. *Bacteriophage.*—The Bacteriophage supplied by Dr. F. d'Herelle from Egypt was found to be non-effective against the Flexner group of dysenteries common here, though it was most effective in Rio de Janeiro with Shiga infections. Enquiries are being made, and Dr. d'Herelle will visit the Federated Malay States in 1927.

119. *Diptheria.*—Dr. Fletcher decides amongst other observations that carriers are common and the population highly immune.

120. *Enteric (Typhoid Fever).*—The evidence goes to show that this disease is unusually uncommon in the Federated Malay States. Barbadoes claims to be very healthy but had for five years an average of 1,332 cases yearly which were notified, as against the Federated Malay States hundred or so notified cases. The population of Barbadoes is 159,499 only, that of the Federated Malay States over 1,500,000.

121. *Anti-rabic Treatment.*—The Pasteur Institute has been a success 183 persons were given anti-rabic treatment in Kuala Lumpur. A branch treatment Centre was opened in Malacca the material being supplied from Kuala Lumpur.

Prophylactic inoculations of dogs against rabies were successfully carried out.

122. *Morbid Growths.*—In all 195 specimens of morbid growths were examined and reported on for various hospitals.

123. *Chemical Division.*—The Chemical Division carried out numerous investigations for the medical and other departments. Amongst others a laborious investigation into the effluents from small experimental sewage installations which is still going on.

Rice polishing extract for use in beri-beri was manufactured on a large scale by the Chemists.

124. *Malaria Bureau.*—Nine special reports were issued during 1926. Exhibits were shown at Agricultural Exhibitions. The investigation in malaria in rice-fields was continued in Perak and Negri Sembilan.

Type collections of Malayan mosquitoes were sent to fifteen persons.

The larvicidal properties of rubber oil were enquired into. It is efficient only when heavily applied, and it must be used fresh.

125. *Malaria Carriers.*—Experiments made on A. separatus tended to prove that it was not a carrier.

126. During the year the Institute for Medical Research and the Malaria Bureau have been short of staff and overworked, but the results are excellent.

COMMENTS ON THE REPORT OF THE MEDICAL SUPERINTENDENT, CENTRAL MENTAL HOSPITAL, TANJONG RAMBUTAN.

127. There were at the end of 1926, 1,212 male and 338 female patients at the Central Mental Hospital. They were made up as follows:

	Males.	Females.
Remained on 31st December, 1925	1,145	306
Admitted during 1926	489	155
Discharged—Recovered	151	56
,, Relieved	56	20
,, Not improved	54	22
,, Not insane	1	—
Absconded	78	—
Died	82	25
Total ...	1,212	338

128. The following admissions were made during the year from places outside the Federated Malay States:

	Males.	Females.
Singapore	1 ...	—
Kedah	40 ...	11
Kelantan	2 ...	—

129. *Admissions.*—The total admissions during the year was 735 which shows an increase of 69 on last year, when the numbers were 666. In 1924 the admissions were 614.

130. *Discharges.*—These numbered 360 of whom 207 were discharged recovered and 76 relieved.

131. The Medical Superintendent comments on the danger of alcohol taking the place of opium amongst the Chinese.

APPENDICES.

132. The following are attached as appendices:

A.—Report of the Director, Institute for Medical Research.

B.—Report of the Malaria Research Officer, Institute for Medical Research.

C.—Report of the Chemist, Institute for Medical Research.

D.—Report of the Chief Health Officer.

E.—Report of the Registrar-General of Births and Deaths.

F.—Report of the Chief Surgeon, Perak.

G.—Report of the Chief Surgeon, Selangor.

H.—Report of the Medical Superintendent, Central Mental Hospital.

I.—Report of the Specialist, Venereal Diseases.

J.—Report of the Ophthalmologist Surgeon, Ipoh.

K.—Report of the Deputy Medical Officer in Charge of Ophthalmic Clinic, Kuala Lumpur.

L.—Report of the Radiologist, Federated Malay States.

M.—Report of the Medical Officer in Charge of the Leper Asylum, Kuala Lumpur.

N.—Report of the Lady Medical Officer, Infant Welfare Centre, Kuala Lumpur.

O.—Report of the Lady Medical Officer, Infant Welfare Centre, Ipoh.

P.—Report of the Lady Medical Officer, Infant Welfare Centre, Taiping.

KUALA LUMPUR,
20th April, 1927.

R. DOWDEN,
Principal Medical Officer, F.M.S.

TABLE 1.

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1926.

The form shows in the main the arrangement of diseases in the International Nomenclature, 1921 Edition. To save space the unimportant diseases of any class can be grouped in their places as "Other Diseases" of the class.

* i.e. the year previous to that for which the return is made.

† "Total cases treated" will, of course, include those remaining in hospital at the end of the previous year.

‡ The figures in this column to be carried on to the next year's return.

Diseases.	* Remaining in Hospital at end of 1925.	Yearly total.		† Total cases treated.	‡ Remaining in Hospital at end of 1926.	Remarks.
		Admissions.	Deaths.			
I.—EPIDEMIC, ENDEMIC, AND INFECTIOUS DISEASES.						
1. Enteric group—						
(*a*) Typhoid fever	13	115	23	128	13	
(*b*) Paratyphoid A.	...	4	...	4	...	
(*c*) Paratyphoid B.	...	15	3	15	2	
(*d*) Type not defined	1	9	...	10	...	
2. Typhus	3	56	3	59	3	
3. Relapsing fever	...	...	...	...	...	
4. Undulant fever	65	541	18	606	14	
Other types	9	482	13	491	2	
5. Malaria—						
(*a*) Tertian	123	9,224	194	9,347	277	
(*b*) Quartan	17	557	12	574	7	
(*c*) Aestivo—autumnal	320	18,624	1,146	18,944	389	
(*d*) Cachexia	157	9,264	407	9,421	197	
(*e*) Black-water	...	28	5	28	...	
(*f*) Mixed infection	6	216	22	222	8	
6. Small-pox—						
Alastrim	...	...	...	...	...	
7. Measles	27	533	3	560	7	
8. Scarlet fever	...	...	...	...	...	
9. Whooping cough	5	53	5	58	1	
10. Diphtheria	...	45	11	45	3	
11. Influenza	125	5,405	74	5,530	89	
12. Miliary fever	...	...	...	...	...	
13. Mumps	2	96	2	98	1	
14. Cholera	...	...	...	...	...	
15. Epidemic diarrhœa	1	...	...	1	...	
16. Dysentery—						
(*a*) Amœbic	36	1,606	294	1,642	55	
(*b*) Bacillary	71	1,975	511	2,046	84	
(*c*) Undefined or due to other causes	5	204	47	209	23	
17. Plague—						
(*a*) Bubonic	...	...	...	...	...	
(*b*) Pneumonic	...	...	...	...	...	
(*c*) Septicæmic	...	...	...	...	...	
(*d*) Undefined	...	...	...	...	...	
18. Yellow fever	...	...	...	...	...	
19. Spirochætosis—						
Ictero-hæmorrhagica	...	6	1	6	...	
20. Leprosy	658	483	66	1,141	719	
21. Erysipelas	2	46	15	48	...	
22. Acute poliomyelitis	...	1	1	1	...	
23. Encephalitis lethargica	...	1	...	1	1	
24. Epidemic cerebro-spinal fever	2	21	13	23	3	

TABLE 1—(*cont.*)

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1926—(*cont.*)

Diseases.	* Remaining in Hospital at end of 1925.	Yearly total.		† Total cases treated.	‡ Remaining in Hospital at end of 1926.	Remarks.
		Admissions.	Deaths.			
I.—EPIDEMIC, ENDEMIC, AND INFECTIOUS DISEASES—(*cont.*)						
25. Other epidemic diseases—						
(*a*) Rubeola (German measles)	...	7	...	7	....	
(*b*) Varicella (chicken-pox)	4	88	...	92	1	
(*c*) Kala-azar	...	...	...	...	...	
(*d*) Phlebotomus fever	...	...	...	...	...	
(*e*) Dengue	1	66	...	67	...	
(*f*) Epidemic dropsy	...	...	...	...	...	
(*g*) Yaws	10	228	...	238	9	
(*h*) Trypanosomiasis	...	...	...	...	...	
26. Glanders	...	...	...	...	...	
27. Anthrax	...	...	...	...	...	
28. Rabies	...	...	...	...	....	
29. Tetanus	...	76	57	76	1	
30. Mycosis	...	...	...	...	...	
31. Tuberculosis, pulmonary and laryngeal ...	183	2,139	992	2,322	177	
32. Tuberculosis of the meninges or central nervous system	...	10	8	10	...	
33. Tuberculosis of the intestines or peritoneum	1	22	14	23	...	
34. Tuberculosis of the vertebral column	1	4	1	5	2	
35. Tuberculosis of bones and joints	3	30	11	33	4	
36. Tuberculosis of other organs—						
(*a*) Skin or subcutaneous tissue (lupus) ...	...	2	...	2	1	
(*b*) Bones	...	...	...	...	...	
(*c*) Lymphatic system	...	23	1	23	1	
(*d*) Genito-urinary	...	5	1	5	...	
(*e*) Other organs	...	5	3	5	...	
37. Tuberculosis disseminated—						
(*a*) Acute	...	3	3	3	...	
(*b*) Chronic	2	39	22	41	1	
38. Syphilis—						
(*a*) Primary	40	722	...	762	51	
(*b*) Secondary	56	781	15	837	48	
(*c*) Tertiary	33	308	19	341	36	
(*d*) Hereditary	1	28	8	29	1	
(*e*) Period not indicated	...	49	2	49	1	
39. Soft chancre	54	648	...	702	12	
40. A.—Gonorrhœa and its complications ...	71	1,435	4	1,506	54	
B.—Gonorrhœal ophthalmia	1	42	1	43	4	
C.—Gonorrhœal arthritis	6	146	2	152	11	
D.—Granuloma venereum	...	7	...	7	2	
41. Septicæmia	...	137	103	137	...	
42. Other infectious diseases	3	417	22	420	5	
Trypanosomiasis	...	...	...	...	...	
II.—GENERAL DISEASES NOT MENTIONED ABOVE.						
43. Cancer or other malignant tumours of the buccal cavity	2	26	11	28	3	
44. Cancer or other malignant tumours of the stomach or liver	...	52	41	52	...	
45. Cancer or other malignant tumours of the peritoneum intestines, rectum	...	21	11	21	...	
46. Cancer or other malignant tumours of the female genital organs	1	23	8	24	...	

TABLE 1—(*cont.*)

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1926—(*cont.*)

Diseases.	* Remaining in Hospital at end of 1925.	Yearly total.		† Total cases treated.	‡ Remaining in Hospital at end of 1926.	Remarks.
		Admissions.	Deaths.			
II.—GENERAL DISEASES NOT MENTIONED ABOVE—(*cont.*)						
47. Cancer or other malignant tumours of the breast	...	9	1	9	...	
48. Cancer or other malignant tumours of the skin	2	25	8	27	4	
49. Cancer or other malignant tumours of organs not specified	7	41	14	48	3	
50. Tumours non-malignant	11	125	4	136	4	
51. Acute rheumatism	3	151	2	154	2	
52. Chronic rheumatism	12	296	2	308	13	
53. Scurvy (including Barlow's disease)	...	7	1	7	2	
54. Pellagra	...	2	...	2	...	
55. Beri-beri	127	948	140	1,075	157	
56. Rickets	3	6	5	9	...	
57. Diabetes (not including insipidus)	6	92	11	98	5	
58. Anæmia—						
(*a*) Pernicious	8	182	72	190	6	
(*b*) Other anæmias and chlorosis	36	789	210	825	34	
59. Diseases of the pituitary body	...	...	...	...	...	
60. Diseases of the thyroid gland—						
(*a*) Exophthalmic goitre	...	1	...	1	...	
(*b*) Other diseases of the thyroid gland, myxœdema	...	...	...	...	...	
61. Diseases of the para-thyroid glands	...	...	...	...		
62. Diseases of the thymus	...	...	...	...	...	
63. Diseases of the supra-renal glands	...	...	...	...	...	
64. Diseases of the spleen	...	102	3	102	2	
65. Leukæmia—						
(*a*) Leukæmia	...	3	1	3	...	
(*b*) Hodgkin's disease	...	1	...	1	...	
66. Alcoholism	1	40	1	41	1	
67. Chronic poisoning by mineral substances (lead, mercury, etc.)	...	13	4	13	...	
68. Chronic poisoning by organic substances (morphia, cocaine, etc.)	35	388	1	423	4	
69. Other general diseases	22	265	82	287	4	
Auto-intoxication	...	1	...	1	...	
Purpura hæmorrhagica	...	2	...	2	...	
Hæmophilia	...	6	1	6	...	
Diabetes insipidus	...	2	...	2	...	
III.—AFFECTIONS OF THE NERVOUS SYSTEM AND ORGANS OF THE SENSES.						
70. Encephalitis (not including encephalitis Lethargica)	2	20	6	22	...	
71. Meningitis (not including tuberculous meningitis or cerebro-spinal meningitis)	...	74	62	74	1	
72. Locomotor ataxia	4	8	3	12	3	
73. Other affections of the spinal cord	...	40	13	40	...	
74. Apoplexy	...	7	5	7	...	
(*a*) Hæmorrhage	2	34	17	36	3	
(*b*) Embolism	...	1	1	1	...	
(*c*) Thrombosis	...	...	...	...	...	

TABLE 1—(*cont.*)

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1926—(*cont.*)

Diseases.	* Remaining in Hospital at end of 1925.	Yearly total.		† Total cases treated.	‡ Remaining in Hospital at end of 1926.	Remarks.
		Admissions.	Deaths.			
III.—AFFECTIONS OF THE NERVOUS SYSTEM AND ORGANS OF THE SENSES—(*cont.*)						
75. Paralysis—						
(*a*) Hemiplegia	36	170	35	206	36	
(*b*) Other paralyses	19	109	17	128	33	
76. General paralysis of the insane	...	13	...	13	...	
77. Other forms of mental alienation	7	539	7	546	16	
78. Epilepsy	7	101	5	108	5	
79. Eclampsia, convulsions (non-puerperal) 5 years or over	...	6	2	6	1	
80. Infantile convulsions	1	41	27	42	1	
81. Chorea	...	2	1	2	...	
82. A.—Hysteria	...	17	...	17	...	
B.—Neuritis	12	156	2	168	10	
C.—Neurasthenia	2	44	...	46	1	
83. Cerebral softening	...	4	3	4	1	
84. Other affections of the nervous system, such as paralysis agitans	9	420	17	429	8	
85. Affections of the organs of vision—						
(*a*) Diseases of the eye	94	340	3	434	61	
(*b*) Conjunctivitis	13	764	...	777	16	
(*c*) Trachoma	2	116	...	118	15	
(*d*) Tumours of the eye	...	22	...	22	...	
(*e*) Other affections of the eye	96	611	2	707	123	
86. Affections of the ear or mastoid sinus	6	293	4	299	6	
IV.—AFFECTIONS OF THE CIRCULATORY SYSTEM.						
87. Pericarditis	...	24	21	24	...	
88. Acute endocarditis or myocarditis	5	22	9	27	1	
89. Angina pectoris	...	5	...	5	...	
90. Other diseases of the heart	2	67	30	69	3	
(*a*) Valvular	6	68	30	74	3	
Mitral	18	227	92	245	14	
Aortic	...	35	12	35	1	
Tricuspid	...	...	...	...	...	
Pulmonary	...	7	3	7	...	
(*b*) Myocarditis	2	28	22	30	...	
91. Diseases of the arteries—						
(*a*) Aneurism	2	14	9	16	...	
(*b*) Arterio-sclerosis	...	12	3	12	2	
(*c*) Other diseases	1	5	4	6	...	
92. Embolism or thrombosis (non-cerebral)	...	9	2	9	...	
93. Diseases of the veins—						
Hæmorrhoids	13	211	3	224	8	
Varicose veins	...	3	1	3	...	
Phlebitis	...	2	...	2	1	
94. Diseases of the lymphatic system	...	36	3	36	...	
Lymphangitis	7	132	...	139	2	
Lymphadenitis, bubo (non-specific)	44	560	4	604	42	
95. Hæmorrhage of undetermined cause	...	4	...	4	...	
96. Other affections of the circulatory system	5	103	54	108	...	

TABLE 1—(*cont.*)

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1926—(*cont.*)

Diseases.	* Remaining in Hospital at end of 1925.	Yearly total.		† Total cases treated.	‡ Remaining in Hospital at end of 1926.	Remarks.
		Admissions.	Deaths.			
V.—AFFECTIONS OF THE RESPIRATORY SYSTEM.						
97. Diseases of the nasal passages	...	1	...	1	...	
Adenoids	...	9	...	9	...	
Polypus	1	16	...	17	...	
Rhinitis	1	17	...	18	...	
Coryza	2	133	...	135	...	
98. Affections of the larynx—						
Laryngitis	1	48	2	49	...	
99. Bronchitis	7	180	8	187	5	
(*a*) Acute	86	2,237	54	2,323	61	
(*b*) Chronic	41	944	59	985	35	
100. Broncho-pneumonia	40	579	307	619	17	
101. Pneumonia	4	85	54	89	1	
(*a*) Lobar	50	1,739	766	1,789	41	
(*b*) Unclassified	31	484	245	515	13	
102. Pleurisy, empyema	18	344	50	362	14	
103. Congestion of the lungs	...	2	...	2	...	
104. Gangrene of the lungs	...	36	27	36	1	
105. Asthma	14	592	18	606	26	
106. Pulmonary emphysema	...	7	...	7	...	
107. Other affections of the lungs	14	557	15	571	8	
Pulmonary spirochaetosis	...	1	1	1	...	
VI.—DISEASES OF THE DIGESTIVE SYSTEM.						
108. A.—Diseases of teeth or gums	...	3	...	3	...	
Caries, pyorrhœa, etc.	1	130	1	131	2	
B.—Other affections of the mouth	...	2	2	2	...	
Stomatitis	2	122	7	124	...	
Glossitis, etc.	...	10	...	10	2	
109. Affections of the pharynx or tonsils—						
Tonsillitis	3	207	2	210	7	
Pharyngitis	...	104	...	104	1	
110. Affections of the œsophagus	...	...	...	...	...	
111. A.—Ulcer of the stomach	4	60	14	64	2	
B.—Ulcer of the duodenum	...	14	3	14	1	
112. Other affections of the stomach	...	47	2	47	...	
Gastritis	7	397	10	404	9	
Dyspepsia, etc.	14	474	2	488	10	
113. Diarrhœa and enteritis—						
Under two years	17	424	69	441	8	
114. Diarrhœa and Enteritis	1	63	5	64	1	
Two years and over	60	1,993	270	2,053	64	
Colitis	5	119	3	124	6	
Ulceration	...	16	6	16	...	
114A. Sprue	3	83	20	86	3	
115. Ankylostomiasis	105	2,388	120	2,493	55	
116. Diseases due to intestinal parasites—						
(*a*) Cestoda (tænia)	1	5	...	6	1	
(*b*) Trematoda (flukes)	...	...	...	...	...	
(*c*) Nematoda (other than ankylostoma)	...	2	...	2	...	
Ascaris	60	2,652	21	2,712	36	
Trichocephalus dispar	...	1	...	1	...	
Trichina	...	...	...	...	...	
Dracunculus	1	17	...	18	1	
Strongylus	...	2	...	2	...	
Oxyuris	...	...	...	...	...	

TABLE 1.—(*cont.*)

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1926—(*cont.*)

Diseases.	* Remaining in Hospital at end of 1925.	Yearly total.		† Total cases treated.	‡ Remaining in Hospital at end of 1926.	Remarks.
		Admissions.	Deaths.			
VI.—DISEASES OF THE DIGESTIVE SYSTEM—(*cont.*)						
Diseases due to intestinal parasites—(*cont.*)						
(*d*) Coccidia	...	...	...	...	...	
(*e*) Other parasites	...	15	...	15	...	
(*f*) Unclassified	1	...	...	1	...	
117. Appendicitis	3	145	19	148	6	
118. Hernia	10	208	11	218	24	
119. A.—Affections of the anus, fistula, etc.	4	97	1	101	4	
B.—Other affections of the intestines	...	79	7	79	...	
Enteroptosis	...	...	...	...	...	
Constipation	9	628	...	637	6	
120. Acute yellow atrophy of the liver	...	...	...	...	...	
121. Hydatid of the liver	...	1	1	1	...	
122. Cirrhosis of the liver	4	124	41	128	11	
(*a*) Alcoholic	1	37	22	38	...	
(*b*) Other forms	20	255	119	275	15	
123. Biliary Calculus	...	...	...	...	...	
124. Other affections of the liver	...	4	1	4	...	
Abscess	5	117	27	122	7	
Hepatitis	4	125	4	129	7	
Cholecystitis	...	21	10	21	...	
Jaundice	6	145	19	151	2	
125. Diseases of the pancreas	...	...	...	...	...	
126. Peritonitis (of unknown cause)	4	69	52	73	1	
127. Other affections of the digestive system	20	577	40	597	15	
VII.—DISEASES OF THE GENITO-URINARY SYSTEM (NON-VENEREAL).						
128. Acute nephritis	31	433	123	464	20	
129. Chronic	20	405	161	425	26	
130. A.—Chyluria	...	...	...	...	...	
B.—Schistosomiasis	...	...	...	...	...	
131. Other affections of the kidneys	4	51	9	55	2	
Pyelitis, etc.	...	50	8	50	2	
132. Urinary calculus	1	41	2	42	2	
133. Diseases of the bladder	3	13	...	16	1	
Cystitis	2	83	13	85	2	
134. Diseases of the urethra—						
(*a*) Stricture	2	102	3	104	3	
(*b*) Other	5	195	7	200	13	
135. Diseases of the prostate	...	2	...	2	1	
Hypertrophy	...	1	...	1	...	
Prostatitis	4	16	...	20	...	
136. Diseases (non-venereal) of the genital organs of man	21	228	7	249	7	
Epididymitis	2	89	...	91	1	
Orchitis	2	131	...	133	3	
Hydrocele	1	84	...	85	5	
Ulcer of Penis	4	22	...	26	1	
137. Cysts or other non-malignant tumours of the ovaries	2	16	1	18	1	
138. Salpingitis	...	15	...	15	...	
Abscess of the pelvis	...	1	1	1	...	
139. Uterine tumours (non-malignant)	...	9	1	9	...	
140. Uterine hæmorrhage (non-puerperal)	...	10	...	10	1	

TABLE 1—(*cont.*)

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1926—(*cont.*)

Diseases.	* Remaining in Hospital at end of 1925.	Yearly total.		† Total cases treated.	‡ Remaining in Hospital at end of 1926.	Remarks.
		Admissions.	Deaths.			
VII.—DISEASES OF THE GENITO-URINARY SYSTEM (NON-VENEREAL)—(*cont.*)						
141. A.—Metritis	...	8	...	8	...	
B.—Other affections of the female genital organs	17	278	14	295	5	
Displacements of uterus	...	19	...	19	...	
Amenorrhœa	...	19	...	19	...	
Dysmenorrhœa	...	28	...	28	1	
Leucorrhœa	...	83	...	83	3	
142. Diseases of the breast (non-puerperal)—						
Mastitis	2	25	1	27	1	
Abscess of breast	1	15	...	16	...	
VIII.—PUERPERAL STATE.						
143. A.—Normal labour	89	1,915	5	2,004	78	
B.—Accidents of Pregnancy	...	11	3	11	...	
(*a*) Abortion	3	176	2	179	...	
(*b*) Ectopic gestation	...	5	1	5	...	
(*c*) Other accidents of pregnancy	2	96	22	98	2	
144. Puerperal hæmorrhage	...	4	1	4	...	
145. Other accidents of parturition	4	75	14	79	2	
146. Puerperal septicæmia	4	86	40	90	...	
147. Phlegmasia dolens	...	4	...	4	1	
148. Puerperal eclampsia	...	21	5	21	1	
149. Sequelæ of labour	...	72	9	72	...	
150. Puerperal affections of the breast	...	...	...	...	...	
Pregnancy	1	48	...	49	9	
IX.—AFFECTIONS OF THE SKIN AND CELLULAR TISSUES.						
151. Gangrene	2	41	21	43	4	
152. Boil	3	133	...	136	...	
Carbuncle	1	55	...	56	...	
153. Abscess	81	1,899	37	1,980	84	
Whitlow	...	39	...	39	1	
Cellulitis	39	686	62	725	46	
154. A.—Tinea	1	133	...	134	6	
B.—Scabies	28	1,101	1	1,129	41	
155. Other diseases of the skin	245	4,368	52	4,613	266	
Brythema	...	4	...	4	...	
Urticaria	2	66	1	68	1	
Eczema	16	493	...	509	12	
Herpes	...	79	...	79	1	
Psoriasis	...	10	...	10	...	
Elephantiasis	2	28	...	30	2	
Myiasis	...	3	...	3	...	
Chigœs	...	...	...	...	...	
Cutaneous leishmaniasis	8	235	1	243	7	
Cutaneous leishmaniasis ulcers	83	1910	16	1,993	135	
X.—DISEASES OF BONES AND ORGANS OF LOCOMOTION (OTHER THAN TUBERCULOUS).						
156. Diseases of bones	1	5	...	6	3	
Osteitis	...	32	1	32	3	
157. Diseases of joints	...	2	...	2	...	
Arthritis	35	360	14	395	27	
Synovitis	3	92	...	95	5	
158. Other diseases of bones or organs of locomotion	29	361	7	390	13	

TABLE 1—(*cont*).

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1926—(*cont.*)

Diseases.	* Remaining in Hospital at end of 1925.	Yearly total.		† Total cases treated.	‡ Remaining in Hospital at end of 1926.	Remarks.
		Admissions.	Deaths.			
XI.—MALFORMATIONS.						
159. Malformations	25	16	1	41	21	
Hydrocephalus	...	2	1	2	...	
Hypospadias	...	...	...	...	...	
Spina bifida, etc.	...	3	...	3	...	
XII.—DISEASES OF INFANCY.						
160. Congenital debility	1	44	26	45	4	
161. Premature birth	...	177	146	177	2	
162. Other affections of infancy	...	32	20	32	3	
163. Infant neglect (infants of three months or over)	...	10	6	10	...	
XIII.—AFFECTIONS OF OLD AGE.						
164. Senility	68	356	99	424	107	
Senile dementia	...	39	6	39	1	
XIV.—AFFECTIONS PRODUCED BY EXTERNAL CAUSES.						
165. Suicide by poisoning	...	...	...	...	...	
166. Corrosive poisoning (intentional)	...	...	...	...	...	
167. Suicide by gas poisoning	...	...	...	...	...	
168. Suicide by hanging or strangulation... ...	...	4	4	4	...	
169. Suicide by drowning	...	1	1	1	...	
170. Suicide by firearms	...	...	...	...	...	
171. Suicide by cutting or stabbing instruments...	...	3	...	3	...	
172. Suicide by jumping from a height	...	...	...	...	...	
173. Suicide by crushing	...	...	...	...	...	
174. Other suicides	...	...	...	...	...	
175. Food poisoning...	...	23	4	23	...	
Botulism	...	...	...	...	...	
176. Attacks of poisonous animals...	...	1	...	1	...	
Snake bite	...	12	...	12	2	
Insect bite	...	14	1	14	...	
177. Other accidental poisonings	1	43	6	44	1	
178. Burns (by fire)...	1	99	4	100	8	
179. Burns (other than by fire)	2	110	12	112	4	
180. Suffocation (accidental)	...	...	...	...	...	
181. Poisoning by gas (accidental)	...	1	...	1	...	
182. Drowning (accidental)...	...	...	...	...	...	
183. Wounds (by firearms, war excepted) ...	1	26	2	27	1	
184. Wounds (by cutting or stabbing instruments)	63	2,199	37	2,262	85	
185. Wounds (by fall)	35	1,270	15	1,305	34	
186. Wounds (in mines or quarries)	14	612	4	626	11	
187. Wounds (by machinery)	1	201	1	202	2	
188. Wounds (crushing, e.g., railway accidents, etc.)	5	100	3	105	4	
189. Injuries inflicted by animals, bites, kicks, etc.	6	343	3	349	15	
190. Wounds inflicted on active service	...	...	...	...	...	
191. Executions of civilians by belligerents ...	...	...	...	...	...	
192. A.—Over fatigue	...	...	...	...	...	
B.—Hunger or thirst	...	2	1	2	...	
193. Exposure to cold, frost bite, etc.	...	...	...	...	...	
194. Exposure to heat—						
Heatstroke	...	1	1	1	...	
Sunstroke	...	...	...	...	...	
195. Lightning stroke	...	1	...	1	...	
196. Electric shock	...	1	...	1	...	
197. Murder by firearms	...	...	...	...	...	

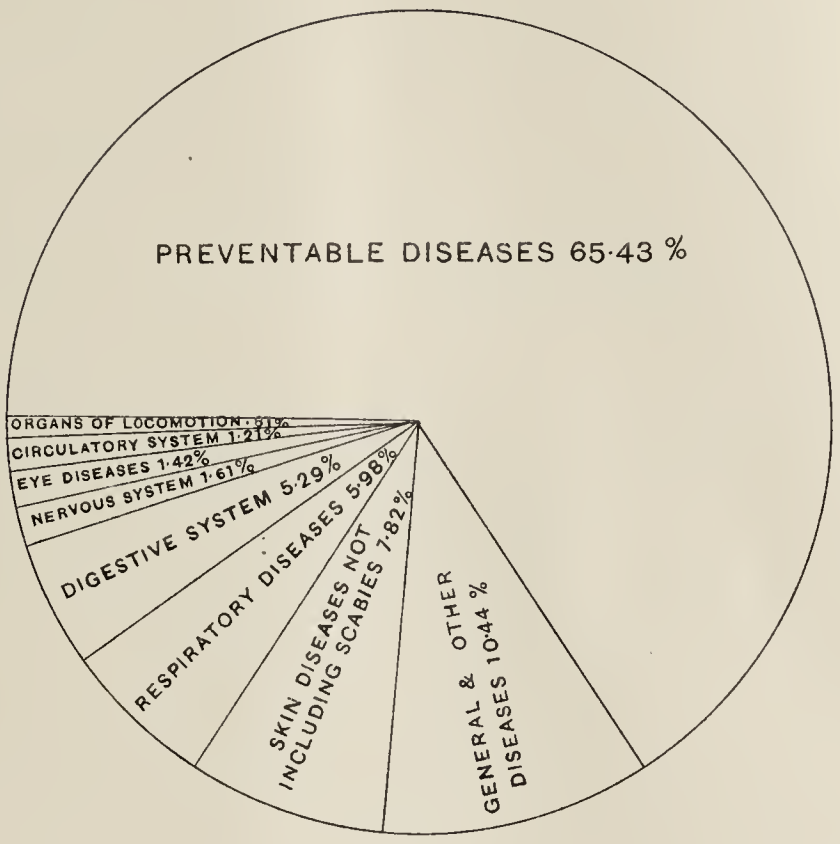
TABLE 1—(*cont.*)

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1926—(*cont.*)

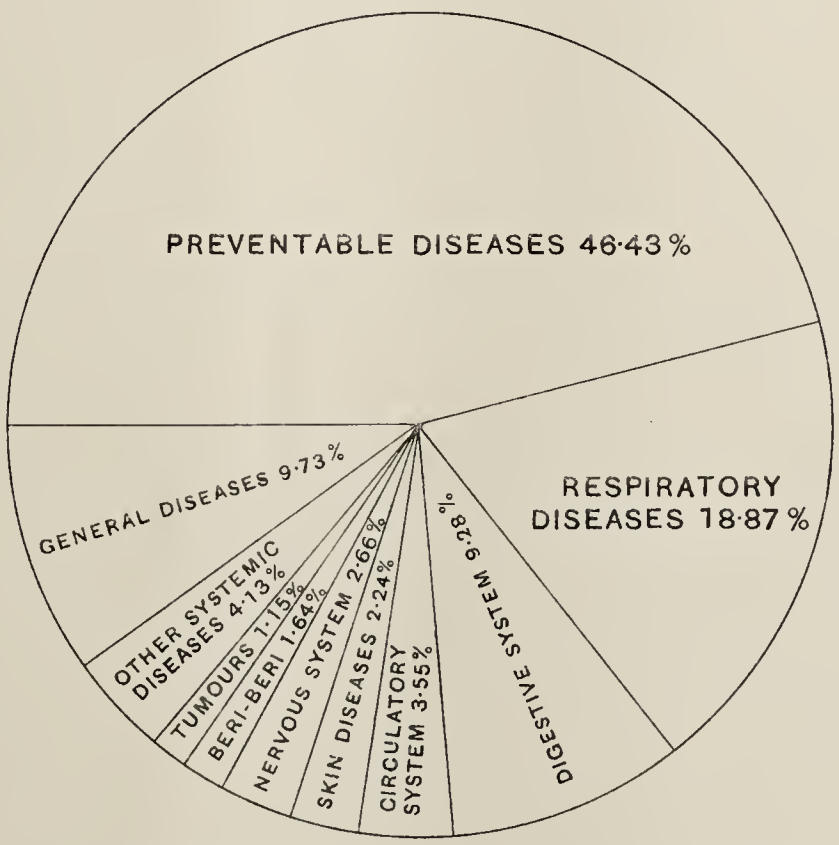
Diseases.	* Remaining in Hospital at end of 1925.	Yearly Total.		† Total cases treated.	‡ Remaining in Hospital at end of 1926.	Remarks.
		Admissions.	Deaths.			
XIV.—AFFECTIONS PRODUCED BY EXTERNAL CAUSES—(*cont.*)						
198. Murder by cutting or stabbing instruments	...	8	7	8	...	
199. Murder by other means	...	2	2	2	...	
200. Infanticide (murder of an infant under one year)						
201. A.—Dislocation	...	80	...	80	5	
B.—Sprain	2	219	...	221	2	
C.—Fracture	43	795	72	838	70	
202. Other external injuries	119	2,018	23	2,137	65	
203. Deaths by violence of unknown cause ...	...	1	1	1	...	
XV.—ILL-DEFINED DISEASES.						
204. Sudden death (cause unknown)	...	4	4	4	...	
205. A.—Diseases not already specified or ill-defined	171	4,027	18	4,198	126	
Ascites	2	61	15	63	...	
Œdema	...	22	...	22	1	
Asthenia	4	104	27	108	2	
Shock	...	14	8	14	...	
Hyperpyrexia	...	39	12	39	...	
B.—Malingering	...	14	...	14	...	
C.—Filariasis	...	1	...	1	...	
XVI.—DISEASES, THE TOTAL OF WHICH HAVE NOT CAUSED 10 DEATHS.	6	466	1	472	62	
. Pyrexia of unknown origin	17	482	26	499	6	
. Paraphinasis	...	3	...	3	1	
3. Toxaemia	...	1	1	1	...	
4. Opium habit	100	1,481	...	1,874	...	
5. N. D. D. and under observation	56	1,743	7	1,799	62	
6. Accompanying	19	1,600	...	1,619	48	
7. Rupture of spleen	...	1	1	1	...	
8. Sciatica	...	1	...	1	...	
Total ...	5,064	122,268	9,178	127,332	5,116	

GENERAL SYSTEMIC & PREVENTABLE DISEASES

TOTAL CASES - 130251



TOTAL DEATHS - 8512



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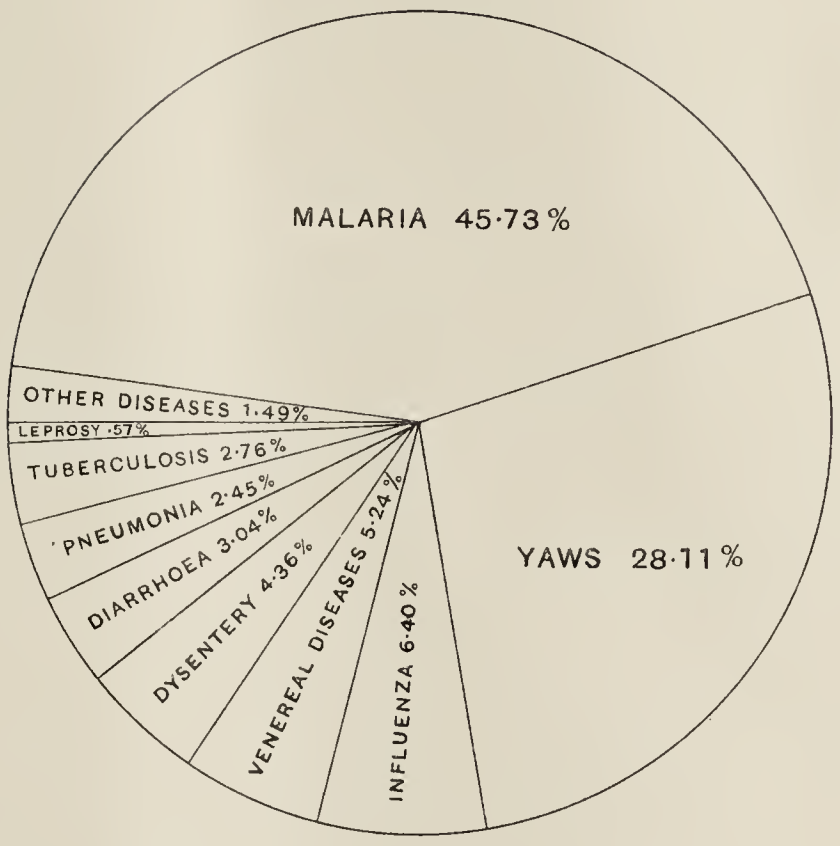
INFECTIVE DISEASES

TOTAL CASES - 84468



TOTAL DEATHS - 5591

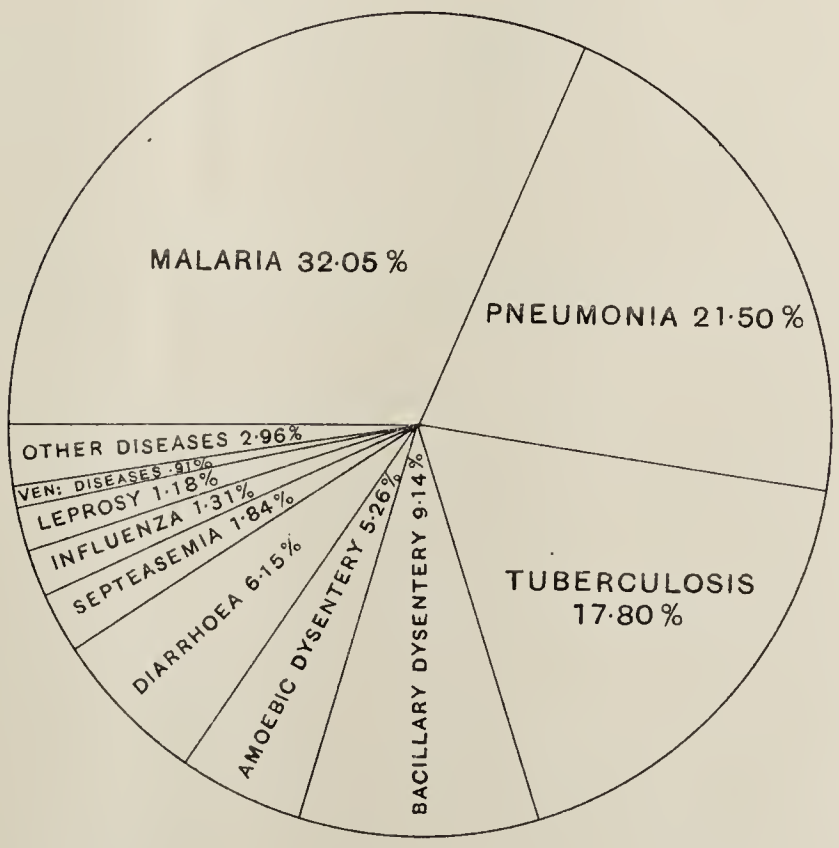


TABLE 2.

MEDICAL STAFF ON 31ST DECEMBER, 1926.

1 Principal Medical Officer
4 Senior Medical Officers
3 Chief Surgeons
1 Ophthalmologist Surgeon
23 Medical Officers
8 Lady Medical Officers (including 2 Infant Welfare)
1 Personal Assistant to the Principal Medical Officer
12 Deputy Medical Officers
11 Assistant Medical Officers
38 Assistant Surgeons
19 Dressers, Special Grade
66 Dressers, Grade I
251 Dressers, Grade II
85 Dressers, Grade III
99 Probationers
3 Matrons, Grade I
4 Matrons, Grade II
40 European Sisters (including 6 Infant Welfare)
78 Asiatic Nurses
17 Native Midwives.

HEALTH BRANCH.

1 Senior Health Officer
11 Health Officers
2 Chief Sanitary Inspectors
4 Assistant Surgeons
5 Health Inspectors, Grade I
23 Health Inspectors, Grade II
1 Malaria Inspector.

INSTITUTE FOR MEDICAL RESEARCH.

1 Director
1 Bacteriologist
1 Pathologist
1 Assistant Pathologist
1 Chemist
3 Assistant Chemists
1 Malaria Research Officer
1 Research Student in Tropical Medicine
1 Assistant Surgeon
1 Librarian
1 Laboratory Assistant, Special Grade
4 Laboratory Assistants, Grade II
4 Laboratory Assistants, Grade III
4 Probationers.

CENTRAL MENTAL HOSPITAL.

1 Medical Superintendent
1 Assistant Medical Superintendent
1 Agricultural Officer
1 Senior Assistant Physician
1 Assistant Physician
1 Second Assistant Physician
1 Inspector
1 Assistant Inspector
2 Dressers, Grade II
2 Probationers
1 Matron
1 Work Mistress
2 Nurses
1 Steward
1 Storekeeper.

VETERINARY BRANCH.

5 Veterinary Surgeons
3 Assistant Veterinary Surgeons
10 Veterinary Inspectors
7 Veterinary Assistants

VENEREAL DISEASE BRANCH

1 Venereal Disease Specialist
1 Assistant Surgeon
1 Nurse
2 Dressers, Grade II (Dispensary)
1 Dresser, Grade III (Laboratory)

RADIOLOGICAL BRANCH.

1 Radiologist
1 Assistant Surgeon
1 Dresser, Grade II
1 Probationer.

ANNUAL REPORT OF THE INSTITUTE FOR MEDICAL RESEARCH FOR THE YEAR, 1926.

An attempt has been made during the year to improve the routine laboratory diagnosis of diphtheria and enteric fevers by the elaboration of the tests applied and by the correlation of the results with the clinical histories. This has been possible because the number of cases is not large; it has rendered the diagnosis more accurate and, at the same time, it has made the routine work more interesting and profitable. The system might be extended to the serum diagnosis of syphilis with advantage, but the number of Wassermann tests is large and it would entail an increase of staff.

Research has been undertaken in many directions. Among the problems immediately before us are the discovery of the vectors of the two forms of tropical typhus: the aetiology of the local form of the tsutsugamushi disease: the classification of the pathogenic leptospirae and the nosology of the leptospiral diseases of Malaya: the preparation of a bacteriophage active against dysentery bacilli of the Flexner group: and more important than all, comes the problem of malaria, which is the country's greatest scourge.

Details of the work which has been done during the year are given under the headings of the more important diseases.

MALARIA.

The price of quinine places it beyond the reach of most of the inhabitants of the vast malaria-stricken regions of the world. The places in which it can be produced successfully are limited, and, even were it sold at cost price many of those who need it would not have the money to buy it. An efficient and trustworthy substitute for quinine which could be produced cheaply in any well-equipped chemical factory would be of enormous benefit to mankind. Already, several preparations have been put on the market as substitutes for the cinchona alkaloids but they have proved useless. Chemists have tried for years to make a synthetic quinine, and recently a substance, closely allied to quinine, and which is said to be a powerful remedy for malaria, has been produced in the Bayer Works at Elberfeld. This substance is called "Plasmochin". In July, the makers were good enough to send us a consignment of the drug and, at the end of the year, Sir Ronald Ross gave us a further supply. We are indebted to Professor W. Nocht for putting us in communication with the Farbenindustrie Aktiengesellschaft at Leverkusen.

Plasmochin is described in the papers given to us by Sir Ronald Ross as an alkylamino-6-methoxy-quinolin salt, obtained by synthetic methods. A tasteless, light yellow, finely granular powder, fairly easily soluble in alcohol, soluble in water to 0.03 per cent. at 20°C. Readily converted by the hydrochloric acid of the stomach into the hydrochloride of plasmochin. It is put up in 0.02 gramme tablets (approximately one-third of a grain) each with a little groove across the middle so that it can be accurately broken in half, when one wishes to give doses such as 0.01 and 0.03 grammes.

The following doses are recommended in the treatment of benign tertain and quartan fevers: One tablet should be given three times a day; that is, 0.06 grammes or about one grain daily. After five days' treatment, there should be an interval of three days and then four days further treatment, and so on. "With due observance of these intervals the treatment may be continued for four or six weeks."

In the treatment of subtertian malaria, the administration of quinine and plasmochin together is recommended, because quinine acts more promptly on the schizonts while the plasmochin attacks the crescents. For this purpose the makers supply a sugar-coated tablet containing 0.01 gramme of plasmochin and 0.125 grammes of quinine sulphate (about one-sixth of a grain of plasmochin with two grains of quinine). The dose recommended is two of these tablets three times a day; that is, about one grain of plasmochin and twelve grains of quinine daily. This dose should be continued for one month without interruption; in the second month it should be reduced to one tablet three times a day.

Plasmochin is more poisonous than quinine. It should not be given on an empty stomach nor should it be administered to persons suffering from diseases of the heart or liver. "*It should not be left to the patient to take the medicine himself but its administration should be always under the control of the nursing staff.*" Cyanosis occasionally appears in patients who are undergoing treatment. When it does so, treatment should be stopped until it has disappeared, which it does in a day or two without leaving any ill effects. Large doses may cause cramps and pains in the stomach. The maximum daily amount for an adult is three doses of two-and-a-half tablets: that is, 0.15 grammes or two-and-a-half grains in a day. Even 0.1 gramme

daily, occasionally causes cyanosis, and it is advisable not to exceed that amount. If convulsive pains of the stomach or cyanosis of the lips are noticed the plasmochin should be stopped, and not given again until the symptoms have completely disappeared.

Dr. W. Röhl, chief of the chemotherapeutic division of the Elberfeld Works, has carried out comparative experiments with quinine and plasmochin, respectively, in the treatment of bird-malaria due to infection with *plasmodium relictum*. He found that a dose of 1 c.cm. of a 1 in 800 solution of quinine was just sufficient to control the parasites, and that a stronger dose than 1 c.cm. of a 1 in 200 solution was poisonous for a bird weighing 20 grammes. When plasmochin was employed in place of quinine, Dr. Röhl found that 1 c.cm. of a 1 in 50,000 solution controlled the parasites and that the dose could be increased to 1 c.cm. of a 1 in 1,500 solution before symptoms of poisoning appeared. That is to say, plasmochin proved thirty times as powerful as quinine, and the effective dose was only one-thirtieth of the poisonous dose. The "working margin" of plasmochin being therefore 1 to 30 as compared with 1 to 4 in the case of quinine.

Professor P. Mühlens, of Hamburg, administered plasmochin to 134 patients who were suffering from chronic malaria. The parasites disappeared and relapses were rarer in tertian and quartan malaria than they are after treatment with quinine. In subtertian malaria, plasmochin proved less powerful than quinine in its action upon the schizonts, but Professor Mühlens states that it has a unique and most valuable property in this form of the disease, namely, that it destroys the gametocytes, which quinine cannot do. Professor Mühlens therefore recommends that quinine and plasmochin should be administered together in the treatment of subtertain malaria, because the quinine acts upon the schizonts while the plasmochin destroys the crescents and thus prevents the patient from infecting mosquitoes and so from being a source of danger to those around him. Plasmochin has also been used in the Balkans, in Italy and in Spain, where it was found as effective in the treatment of acute malaria as it had proved successful in the treatment of chronic relapsing cases in Hamburg.

The Treatment of Malaria in Kuala Lumpur with Plasmochin.—This inquiry is not yet complete; the action of the drug in subtertian malaria must be followed in a much larger number of cases before we can reach trustworthy conclusions in that respect, and the combined treatment with plasmochin and quinine remains to be tested, but a sufficient number of benign tertian cases has been treated to make it worth while presenting this interim report.

Our observations were made on forty-six patients who had been admitted, on account of malaria, to the District Hospital at Kuala Lumpur, and for this privilege we are indebted to Dr. J. P. Fitzpatrick, the Medical Officer in charge of that institution. Thirty-three of the patients were Tamils and thirteen were Chinese. They were all immigrant labourers, thirty had been less than one year in the Malay States and almost all of them were suffering from acute malaria. This series of forty-six patients comprised thirty-one cases of benign tertain fever, four subtertian, eight mixed tertian and three quartan. Neither the patients with benign tertian nor those with quartan malaria were selected in any way; but, in the subtertian and mixed-tertian groups, only mild cases were chosen for treatment.

It is not practicable to keep the ordinary Asiatic hospital patient under observation, and shielded from re-infection with malaria, for a period sufficiently long to gauge the efficiency of drugs in preventing relapses. The patients at the District Hospital in Kuala Lumpur are drawn from a wide area, only six of those treated with plasmochin came from the town or its suburbs. As soon as they considered themselves well enough, they insisted on leaving the hospital, there was no opportunity for further observation and, as most of them returned to the places where they had contracted malaria, there was every chance of re-infection. We were therefore obliged to limit our inquiry to the immediate effects of plasmochin upon the patient, the parasites and the fever.

Each patient was given a dose of one-and-a-half tablets, or 0.03 grammes, twice a day. That is, 0.06 grammes, or about one grain daily. The average weight of the patients was 48.2 kilogrammes (106 lbs.). This is about 70 per cent. of the average weight of a European. The dose of 0.06 grammes, which was given to our Asiatic patients, is equivalent to a dose of 0.085 grammes given to man weighing 70 kilogrammes.

Blood-films were stained with Leishman's stain and examined daily. The number of microscopic fields examined and the number of parasites were noted in each case; in the patients' records the result of each examination was written as a vulgar fraction with the number of parasites as the numerator and the number of fields

examined as the denominator. This is admittedly a rough method; but, as all the slides were prepared by the same hand, it is useful for purposes of comparison and for estimating the progress of the case.

A sample of urine was examined every day, and, at the same time an inquiry was made as to the presence of any toxic symptoms produced by the drug. In most instances the period of special observation and examination was limited to five days, but, in ten cases, this was extended to eight days or longer.

Plasmochin in Benign Tertian Malaria.—Thirty-one men with benign tertian infections were given one-and-a-half tablets of plasmochin, twice a day, with the result that none of them had a temperature over 100°F. after the third day of treatment, and, in every case, with the exception of a man who was suffering from bronchitis, it was normal after the fourth day.

The effect of plasmochin upon the parasites was equally striking. No parasites were found, later than the fourth day of treatment, in any of the thirty-one patients with the single exception of a man in whose blood one trophozoite was discovered in a thousand fields examined on the morning of the fifth day. In twenty-two of these men, no parasites were seen later than the third day.

It is evident from these results that the immediate action of plasmochin is quite equal to that of quinine.

Plasmochin in Quartan Malaria.—Only three cases of quartan malaria have been available for treatment up to the present time. Here again the action of plasmochin proved equal to that of quinine. The parasites disappeared after two days treatment, in one case; and after five days, in the other two. The temperature was normal after the fourth day in two instances; in the third case, there was slight fever until the sixth day, but this was not due to malaria.

Mixed-tertian Malaria.—Plasmochin was administered to eight men who were suffering from mixed infections with *P. vivax* and *P. falciparum*. The benign tertian parasites quickly disappeared but the subtertian parasites, on the contrary, did not. They were found in seven of the patients later than the fourth day, and, in three cases, as they were still present at the end of a week's treatment, we were obliged to give quinine.

Subtertian Malaria.—Only four cases of subtertian malaria have been treated with plasmochin. In one, there were only crescents; in the other three, trophozoites were present, and, in two of them, it became necessary to give quinine at the end of a week's treatment, because the fever continued the patients were getting worse, and parasites were still present in large numbers.

It is evident from these results that plasmochin, given alone, is not suitable for the treatment of subtertian and mixed tertian infections.

Subtertian Gametocytes.—Plasmochin was given to four patients with crescents in their blood. The first had an average of five crescents in a hundred field; none was found after three days' treatment. The second had an average of six crescents; none was found after five days. The third had twenty-five crescents; none was found after four days. The fourth had thirty-five crescents in a hundred fields; they gradually disappeared and none could be found after the seventh day of treatment, though thick and thin films were searched for five days.

It would be wrong to base conclusions upon so small a number of cases; but the results, such as they are, support the claim that plasmochin destroys the gametocytes of *P. falciparum*.

Toxic Symptoms Due to Plasmochin.—Plasmochin is not unpleasant to take because it is tasteless and the dose is small. No toxic symptoms or by-effects were observed. There was no instance of nausea, vomiting, diarrhoea, deafness, vertigo, amaurosis, tremor or headache due to the drug. The urine was examined daily. Albumen was present in the urine of six patients when they were admitted to hospital; this cleared up as the malaria parasites disappeared, except in two of the quartan cases. The plasmochin did not cause albuminuria. It is difficult to detect a slight degree of cyanosis in people with very dark skins. One man became slightly cyanosed; but this was not necessarily due to the plasmochin, as he was very ill with subtertian malaria. Records of blood-pressure were made during the course of treatment in thirty-seven cases but there was no evidence that the plasmochin had any effect upon it.

Objections to Plasmochin.—The makers state that plasmochin is more poisonous than quinine, consequently it would not be safe to supply it (as quinine is supplied in the Malay States) to police stations and to Malay head-men for free distribution.

Plasmochin is as powerful as quinine, in its action upon the parasites of benign tertian and quartan malaria. It is far more pleasant to take than quinine; but there is the drawback that its administration must be controlled by microscopical examination during treatment. Many malarial fevers are due to mixed benign and subtertian infections. In these cases the subtertian parasites may escape notice at the beginning of treatment and there is the risk that they may multiply without detection, while the patient is taking plasmochin, unless the blood is examined repeatedly during the course of treatment. It is therefore not a suitable remedy for outpatients who live at a distance from a hospital where their blood can be examined.

TABLE I.

BENIGN TERTIAN MALARIA.

SHOWING THE LAST DAY OF TREATMENT ON WHICH FEVER AND PARASITES WERE PRESENT IN EACH CASE.

Case number.	Last day on which fever present.	Last day on which parasites present.	Case number.	Last day on which fever present.	Last day on which parasites present.
1	3	4	26	1	4
2	2	2	27	4	1
3	4	4	28	2	2
7	1	2	29	1	1
8	1	2	31	3	4
9	2	1	32	3	3
10	3	2	34	1	1
11	1	2	35	3	4
14	4	4	36	5	5
15	2	3	40	1	2
16	1	3	45	1	4
18	1	4	46	1	1
19	2	2	48	1	3
23	4	3	49	2	3
25	1	2	50	2	2

TABLE II.

QUARTAN, SUBTERTIAN AND MIXED TERTIAN MALARIA.

SHOWING THE LAST DAY OF TREATMENT ON WHICH FEVER AND PARASITES WERE PRESENT IN EACH CASE.

Case number.	Type of disease.	Last day of fever.	Last day parasites found.
4	Quartan	6	2
42	,,	2	5
44	,,	4	5
5	Subtertian	6	6 Quinine
13	,,	1	2
17	,,	6	6 ,,
20	,,	0	7 Crescents only
12	Mixed tertian	3	7 Quinine
21	,,	3	7 ,,
24	,,	3	5
33	,,	8	8 ,,
38	,,	2	4
39	,,	9	9 ,,
43	,,	4	6
47	,,	2	5

(The word "Quinine" after a number, means that plasmochin was discontinued and quinine was given instead.)

THE TSUTSUGAMUSHI DISEASE.

The tsutsugamushi disease or kedani fever, is a continued fever which follows the bite of *trombicula akamushi*, and some closely allied species of mites which convey the virus from rodents to man. It is characterized by a small ulcer covered with a black crust, which appears at the place where the mite has bitten; this is followed by painful swelling of the nearest group of lymphatic glands, a typhus like eruption and high continued fever of two or three weeks duration. The disease is endemic in Japan and Formosa, and also in Sumatra. Dowden has recorded a suspected case in the Federated Malay States, Lagrange has described a typical case

in Annam, and Faust has reported two cases from the central Yangtse Valley. With the exception of the case reported by Dowden, it has not been recognised, hitherto, in any British Colony or Protectorate.

The presence of tsutsugamushi or kedani fever on the east coast of Sumatra is of particular interest to us in the Malay Peninsula, because it is only about twelve hours distant across the Straits of Malacca. The disease was first recognised in Sumatra by Schüffner, who described it under the title of "Pseudotyphoid. A variety of Japanese kedani fever". During the year 1908 he saw 158 cases on the estates of the Senembah Company; and Walch reports that more than three hundred cases were diagnosed in the Company's hospital between 1908 and 1923.

In 1923 there was an outbreak of the disease on a group of rubber estates belonging to the Goodyear Tyre Company, and Keukenschrijver reported that it was particularly prevalent on an estate which was not properly weeded, during the slump in the price of rubber, but was allowed to become over-run with tall grass (*lalang*) and undergrowth, which served as a home for rats. Many of the coolies who were employed in clearing away the undergrowth, became infected. As the clearing progressed the number of casualties declined; in 1923 there were ninety-three cases, in 1924 there were sixty-four, and during the first half of 1925 there were only twelve. These estates are now clean-weeded and Keukenschrijver is confident that the disease will disappear as the hiding places of the rats have been destroyed. Walch is of opinion that the ordinary cover-crops on rubber estates are not likely to be dangerous, because they do not provide suitable accommodation for the rats which build their nests in undergrowth and lalang.

The Aetiology.—The aetiology of the disease has been investigated with great thoroughness by Japanese workers. Miyijima and Kawamura demonstrated some years ago, that the reservoirs of infection in the tsutsugamushi of Japan are certain rodents, particularly a vole, *microtus montebelli*. Hatori has found that, in Formosa, the common house-rat of the country, *M. rattus rufescens*, is the home of the virus; while the small Malay house-rat, *M. concolor*, and a field-rat *M. diardii*, have been incriminated by Walch and Keukenschrijver in Sumatra. The infected rat does not become ill, as a rat with plague does. It remains apparently healthy but its spleen is enlarged. A rat inoculated with the blood of a man suffering from tsutsugamushi shows no symptoms of illness, but its spleen increases to nearly double its original size.

Large numbers of minute mites infect the rodents which inhabit those spots where the tsutsugamushi disease is endemic; it is not uncommon to find fifty or more clustered together within a rat's ear. These mites are the larvae of *trombiculae* and closely resemble *leptus autumnalis*, the European harvest-mite. Many of the mites, such as *trombicula pseudo-akamushi*, are harmless to man and the dangerous species are not the same in Sumatra as in Japan. In Sumatra the chief vector of the disease is *T. deliensis;* in Japan and Formosa it is *T. akamushi*. On an estate in Sumatra, where cases of tsutsugamushi were occurring, Walch found that 50 per cent. of the rats harboured the mite, *T. deliensis*, but on healthy estates, less than 3 per cent. were infested. The adult and nymphal forms of these small acarines do not attack animals, but feed on the juices of reeds and plants. They are found under fallen leaves and decayed vegetation. In Japan, they burrow into the earth, in cold weather, and are captured by digging up the earth and mixing it with water, when they float to the surface. The larvae have been found on almost all the animals which go into the places where they are lurking, rodents, shrews, dogs, cats, goats and buffaloes. Birds possibly play on important part in disseminating the disease by transporting the mites over long distances. The *trombiculae* have been found on the breast, round the eyes and at the base of the beak, in birds of many species. Keukenschrijver examined a number of bubuts, or crow-pheasants (*centropus javanicus*), which frequent lalang and undergrowth in Malaya, with the result that he found the majority of them infested with *T. deliensis*. According to Walch the mites have been found on *acrocephalus orientalis*, a bird which migrates southward from Japan in the winter, and many possibly carry the disease to distant countries.

The *trombiculae* are of microscopic size; the adult form of the Japanese *T. akamushi* measures one millimetre (1/25 inch) in length, and the larva, which attacks man and animals, is only 0.2 mm. (1/125 inch) long, which is less than the ordinary itch-mite, *acarus scabei*. The *T. deliensis* of Sumatra is smaller still.

The larval mites feed only once; when they have fed on an infected host they do not carry the infection to a fresh animal as, fleas carry plague or mosquitoes carry malaria; but while they go through their metamorphosis, as nymphs and as egg-laying adults, they still contain the virus, as Nagayo has demonstrated by injecting their crushed bodies into monkeys. The adult mites do not feed on animals, but they pass on the virus, through their eggs, to the next generation of larvae and these transmit it to the hosts on which they fed.

The virus of the tsutsugamushi disease will not pass through an N. or a V. Berkefeld filter, but its nature has not been finally determined. The resemblance of the disease to typhus and to the spotted fever of the Rocky Mountains has led many observers to search for Rickettsia, and Nagayo with his colleagues at the Government Institute for Infectious Diseases in Tokyo, has demonstrated Rikettsia-like bodies, not only in the skin and lymphatic glands of men and monkeys, but also within the larval mites themselves.

We have had but little opportunity, so far, of investigating the aetiology of the disease in the Federated Malay States. Mr. Lesslar, the Assistant Pathologist, has examined a number of local rats (*M. griseventer* and *M. concolor*) and has found that a large proportion of them harbour clusters of *trombiculae* within their ears. The species of these mites has not yet been determined; they are probably *T. pseudo-akamushi*. The examination of the mites carried by animals and rodents in country districts will be undertaken when circumstances permit; and also an investigation of the *tungau*, a small mite which frequently attacks Malay children by burrowing into their skin.

Tsutsugamushi in Selangor.—During the year 1926, four European planters, who were suffering from tsutsugamushi, have been seen in consultation with Dr. J. W. Field at the European Hospital in Kuala Lumpur. Three of these men came from an oil-palm plantation where they had been working in an area overgrown with weeds and long grass, on the edge of virgin jungle. The fourth patient was a rubber planter. He was taken ill on his return from Sumatra where he had been inspecting some estates on the east coast, but it is probable that he became infected in the Malay States prior to his visit to the Dutch Colony.

One of these men died on the fifteenth day of his illness, the other three recovered, but they were all seriously ill. The first patient to be admitted was not seen by us until he was convalescent and no primary ulcer was noticed in his case. The symptoms in the other three cases were typical of the disease. The onset was gradual, with two or three days prodromal weariness. In each of them, there was a characteristic primary ulcer covered with a black scab and surrounded by a dusky areola. In two cases, the ulcer was situated on the back of the leg; in one, it was on the front of the arm. The nearest lymphatic glands were much enlarged and tender, forming the primary bubo. The bubo subsided as the temperature rose, but the black scab did not separate until the end of the fever. Discomfort in the lower part of the abdomen was a prominent early symptom. A typhus-like rash appeared on the trunk about the fifth day and spread to the limbs later on. There was no rash on the face. The face was congested and the eyes were injected. The temperature rose rapidly but the pulse remained slow until the beginning of the second week. Nervous symptoms, such as headache, restlessness, sleeplessness, delirium and incontinence, were prominent in all cases.

In one instance, the fever lasted for twenty-six days, with a pseudo-crisis at the end of the second week; in another, the temperature became normal on the twentieth day, and, in a third, on the twenty-first day; the fourth patient died from heart failure on the fifteenth day.

The results of inoculating guinea-pigs, a gibbon, and a Macacus monkey were negative. There was leucopenia at the commencement of the fever. The Widal and Weil-Felix reactions were negative.

A full description of these four cases together with temperature charts and photographs will be published in Bulletin No. 1 of the Institute for Medical Research in 1927. Details of one case are given here as an illustration. The patient in question was a muscular European, thirty-six years of age. On July 23rd, he noticed a small insect-bite, a little blister, on the back of his right calf. He suspected what was wrong because he had been reading about tsutsugamushi in a medical book, while his assistant was in hospital suffering from it. Three days later, when a bubo appeared and he felt out of sorts on getting up in the morning, he had little doubt that he had become infected. On July 27th, he had headache with rigors, fever and vomiting, and he was admitted to hospital on the following day with a temperature of 103°F. and a pulse rate of only 76. His eyes were injected and his face was very flushed. There was no rash, no general enlargement of the spleen. The chief complaint at this stage, as in the other cases, was discomfort and pain across the lower part of the abdomen.

When he was admitted to hospital there was a typical primary ulcer, in the middle of the right calf, covered with a black scab and surrounded with a red areola. The primary bubo was situated in the right groin and consisted of the enlarged and tender inguinal and femoral glands. The black scab increased a little in size, up to the tenth day, and did not separate until the twenty-sixth day of illness, when it fell off and left a small, deep pit with a base covered by dried serum.

There was no rash on admission; it began to come out on July 29th, the fourth day. There were then about thirty slightly-raised, discrete, rose-spots on the chest and abdomen, and the same number on the back. They measured about 5 mm. in diameter and looked like rather large mosquito bites. By the next morning, the rash had become quite thick; the rose-macules of the preceding day were darker in colour and, between them, there were great numbers of small spots, more deeply situated, some of which had coalesced to form a subcuticular mottling. The rash was thickest on the trunk, and more scattered, on the arms and legs. At this time, there was no rash on the hands and feet but they were affected later, and, on the eighth day, the eruption was thicker on the knees and on the dorsal surface of the feet than on any part of the body. The rash had almost disappeared from the trunk by the twelfth day, but it was still prominent on the arms and legs, and in the palms of the hands. There were large irregular blotches on the knees, with smaller macules between them. The eruption had entirely disappeared by the sixteenth day.

The pain in the lower part of the abdomen, to which we have referred, did not last more than forty-eight hours after the patient came into hospital; but he was greatly distressed by frequent retching and vomiting, which began on the sixth day and lasted until the fourteenth. The constant retching, and the discomfort in the epigastrium prevented his sleeping and caused him great distress.

His pulse did not reach 100, until the seventh day, subsequently it became more rapid, and it was generally between 100 and 120 until the sixteenth day. Headache was severe during the second week, and there was slight delirium on the thirteenth and fourteenth days. The temperature was never very high except on the sixth day, when it rose to 104.2°F. otherwise it was not above 103°F. There was a kind of pseudo-crisis at the end of the second week; the temperature came down and the patient was much better, but on the sixteenth day it suddenly went up again and oscillated between 100°F. and 102°F. for four days. Finally it became normal on the twenty-seventh day of illness, and convalescence was uninterrupted. There was a characteristic leucopenia at the onset, with only 4,000 leucocytes in a cubic millimetre on the fourth day. A subsequent count, made on the eleventh day of illness, gave 9,000 cells, of which 85 per cent. were polymorphonuclear and 1 per cent. eosinophiles. The Weil-Felix reaction was negative with the indologenic strains of X 19 (No. 67 and Warshaw) of the National Collection of Type Cultures. The non-indologenic strain, Kingsbury, was not agglutinated on the tenth or fifteenth days, but on the twentieth and twenty-fourth days it was agglutinated in low dilutions. On the thirty-fourth and forty-first days the result of this reaction was negative again.

Prophylaxis and Treatment.—The most effective means of dealing with a nidus of infection on an estate appears to be by clearing the area of the weeds and undergrowth in which the rats live. The labourers who work at the clearing should have their bodies smeared with some repellant such as citronella oil and sulphur ointment or with naphthalene paste. Keukenschrijver has found a mixture of cajaput and tobacco-juice to be a good preventive. Japanese authors recommend that mite-proof cotton clothing should be worn, but this is out of question in a hot country like Malaya. The two patients who were bitten on the leg were in the habit of wearing stockings and shorts. The loose texture of woollen stockings offers no obstacle to the passage of the mites and the fibres of wool are ideal things for the mites to cling to. Possibly the most practical prophylactic measure is to wash the body and the clothes thoroughly, immediately on leaving the infected area; in this way the mites which have attached themselves to the body or clothing may be got rid of before they fix themselves in the skin. The clothes should be soaked in 2 per cent. lysol or izal for thirty minutes. Carbolic soap may be employed to advantage. Nagayo states that, when a person is bitten, the onset of the disease may be checked by excising the part of the skin where the mite is found or by extracting the larva with a needle. After the ulcer has appeared and the fever has set in, treatment must be directed to the alleviation of symptoms, there is no specific remedy. Hatori recommends that the ulcer should be excised or cauterized.

TROPICAL TYPHUS.

Sixty cases of tropical typhus were diagnosed during the year; thirty-two belonging to the K. group and twenty-eight belonging to the W. group. Owing to the lack of staff it has not been possible to make any extensive investigations into the aetiology of this disease, though the occurrence of a number of cases on an estate twenty miles from Kuala Lumpur afforded a rare opportunity. Guinea-pigs were inoculated with blood drawn from three cases, on the fifth, the sixth and the eighth days, respectively; but in no instance was there any reaction.

Notes on tropical typhus have appeared in our annual report for the last two years, and three monographs on the same subject have been printed in the series of Bulletins from the Institute for Medical Research. It has been shown in these

publications that there are two groups of tropical typhus, distinguished from one another by the agglutination reaction of the patients' blood-serum with cultures of *B. proteus X 19*. In one group which we call the K. group, the serum agglutinates a non-indol-producing strain "Kingsbury"; in the other group, called the W. group, the serum agglutinates the ordinary strains of *B. proteus X 19*, such as "Warsaw" and "No. 67" of the National Collection of Type Cultures, which are producers of indol.

The two serological groups are epidemiologically distinct. Though tropical typhus is not contagious and does not occur in epidemics, it nevertheless has a patchy distribution and is prevalent in certain places. When a crop of cases occurs in a district they are all of one sort; that is to say, they belong to one group. In 1924 there was a small outbreak in a military camp at Sungei Besi, in which all the cases belonged to the K. group. Again during 1926, a number of cases occurred on an estate in Selangor and the examination of the blood of six of these patients showed that all belonged to the K. group. On the other hand, seven cases which occurred during the same year in the suburbs of Kuala Lumpur all belonged to the W. group. The W. group does not show the same tendency as the K. group, to limitation within certain areas and districts. The different distribution of the two groups indicates a distinct aetiology for each, and one may conjecture that they are not both conveyed to man by the same agent.

The tsutsugamushi disease bears a close resemblance to typhus, and in some cases of this disease there is a slight rise in the titre of the K. group agglutinins during convalescence; moreover, we have seen the two diseases occur together on the same plantation. In view of the prevalence of a form of tsutsugamushi (the "pseudotyphoid" of Schuffner) on the east coast of Sumatra, we have made a detailed search in all the cases of tropical typhus, which we have seen ourselves for the primary ulcer and bubo which are characteristic of the Sumatra disease, but they have not been present in a single instance.

During the past year we have seen tropical typhus and tsutsugamushi side by side in Kuala Lumpur, and we have no hesitation in saying that they are distinct and separate diseases. It is true that they have many points in common; for example, the rapid development of the fever, the prominence of nervous symptoms and the multiform, typhus-like rash; but, on the other hand, each disease has some peculiar characteristic features which distinguish it from the other, notably the primary ulcer in tsutsugamushi and the strongly positive Weil-Felix reaction in tropical typhus. The primary sore and the primary bubo are almost invariably present in the tsutsugamushi disease. Nagayo goes so far as to say that "these two symptoms are constantly present and can be regarded as pathognomonic". In the tsutsugamushi or pseudo-typhoid of Sumatra, Schuffner was able to find the primary sore in 79 per cent. of the native cases and in 100 per cent. of the Europeans. Hatori states that it can always be found if it is looked for carefully. In tropical typhus, on the contrary, there is neither ulcer nor bubo. Kenneth Maxy has recently published clinical observations on 209 cases of non-contagious endemic typhus in Alabama and Georgia, but in the none of these was a primary ulcer noticed.

The confusion in nosology is largely a confusion in language. In German-speaking countries the word typhus is employed in the designation of typhoid and relapsing fever as well as for typhus: a qualifying adjective is added to distinguish one from another. Thus, *typhus abdominalis* corresponds to typhoid, *typhus recurrens* to relapsing fever, and *typhus exanthematicus* to typhus. Schuffner who first described the tsutsugamushi disease of Sumatra, called it, when he was writing in English, "Pseudotyphoid, a variety of Japanese Kedani fever". He was careful to distinguish it from typhus and he wrote, that "its course corresponds in all respects to that seen in enteric fever.....This course sharply distinguishes the disease from typhus with its brusque onset and termination by crisis". In Dutch and German journals however, in which most of Schuffner's work was published, the name pseudotyphoid became pseudotyphus; and in English translations from these papers the word pseudotyphus has been retained and has led to the confusion of this disease with the mild, non-contagious tropical typhus.

A case of tropical typhus belonging to the W. group, which we saw in consultation with Dr. Field in September, 1926, at the European Hospital in Kuala Lumpur, is worthy of record because of its pronounced features. The patient was a merchant who lived in a large brick-built house on the outskirts of Kuala Lumpur. His illness began with headache and shivering, but he did not take to his bed until two days later. A comparatively gradual onset, such as this, is more common in the W. group than it is in the K. group where the invasion is usually rapid. The patient was admitted to hospital on the fourth day of his illness with headache, pain in the back and a temperature which rose to 104°F. in the evening. A macular rash appeared over the upper part of the chest on the sixth day, and subsequently spread to the arms and legs.

The most striking thing about the macules, when they first appeared, was their even spac'ng; they were not grouped or confluent. They were like mosquito-bites, and, on the eighth day, the patient looked as though he had been bitten all over the chest and back with regular intervals of about one inch between the bites. Subsequently, smaller spots appeared between the larger macules, and there was some coalescence, particularly on the back. The eruption was most prominent on the ninth day. There was never any rash on the face, but the whole of the rest of the body was invaded, including the palms of the hands and the soles of the feet. Fading was slow and there were still some dusky spots on the backs of the hands as late as the twenty-first day. Nervous symptoms were prominent. The mental condition of the patient, a man of naturally bright disposition, was much changed, he became querulous and resented all attention. He was sleepless and troubled by bad dreams in the earlier part of his illness and on the eleventh and twelfth days there was slight delirium. His lips, his hands and his voice were tremulous as early as the first week; in the third week he became very deaf; in the fourth week the right knee-jerk was lost while the left was slightly increased. At about the same time, there was a transient paresis of the left arm; he was unable to raise it from the bed for a day or two, but the power quickly returned during convalescence. There was profuse epistaxis on the tenth, eleventh, twelfth and thirteenth days, and a rather severe bronchopneumonia. The respirations were over forty for a week, and the patient's condition appeared grave. For the first two weeks the temperature reached 104°F. nearly every day; it then subsided gradually and by the twenty-fifth day it had become normal. Convalescence was rapid. The Weil-Felix reaction was made with *B. proteus X 19*, strain "Warsaw" of the National Collection of Type Cultures. The reaction was negative on the eighth day; positive at 1 in 250 on the twelfth day; at 1 in 2,500 on the twenty-first day and at 1 in 1,000 on the thirty-third day. There was no agglutination with the K. strain of *B. proteus*.

Bacillus Agglutinabilis. Strain U2.—Professor James Wilson of Belfast very kindly sent us a culture of a coliform organism which he has found to be agglutinated by the serum of people with typhus fever. He has named it *bacillus agglutinabilis*. Strain U2. The bacillus is a gram-negative, coliform organism, which grows well on ordinary media, without spreading in a proteus-like film. It is non-motile; it does not produce indol in peptone water. It forms acid within twenty-four hours in glucose and mannite, and a small bubble of gas in the latter after four days. Acid is formed in saccharose in ten days. Lactose and dulcite are not fermented.

An emulsion of *B. agglutinabilis* was put up with the blood-serum of twenty-one controls in Kuala Lumpur who were not suffering from typhus. Agglutination did not take place in dilutions above 1 in 60 except in one instance when it occurred at 1 in 120; this was a case of tsutsugamushi, a disease which is closely allied to typhus.

B. agglutinabilis is agglutinated by the blood of people with tropical typhus of the W. group, but not as strongly as *B. proteus X 19*. It was agglutinated by a dilution of 1 in 4,000 of a patient's serum collected on the twelfth day of illness. *B. proteus X 19*; strain Warsaw, was agglutinated at twice this titre.

B. agglutinabilis is not agglutinated by the blood of people with tropical typhus of the K. group. It was not agglutinated above a titre of 1 in 60 by a patient's serum which agglutinated *B. proteus*, strain Kingsbury, at 1 in 30,000 on the nineteenth day of illness.

The tests were made with emulsions of living organisms in Wright's pipettes, and the results were read after two hours at 37°C.

TABLE SHOWING AGGLUTINATION OF B. AGGLUTINABILIS IN TROPICAL TYPHUS.

I.—YUSOP. K. GROUP.

Day of illness.	(6)	(10)	(13)	(16)	(19)	(22)
B. proteus Kingsbury	30	120	2,000	8,000	30,000	60,000
B. proteus Warsaw	—	—	—	30	10	10
B. agglutinabilis	30	120	120	120	60	60

II.—PONNAMPALAM W. GROUP.

Day of illness.	(7)	(12)	(15)	(21)
B. proteus Kingsbury	10	30	—	—
B. proteus Warsaw	1,000	8,000	15,000	4,000
B. agglutinabilis	—	4,000	4,000	480

(*The figures show the highest dilution at which agglutination occurred; e.g., the figure 8,000 means that agglutination occurred in a dilution of 1 in 8,000.*)

Bacillus Proteus X 19. Strains Metz and Syrie.—Dr. D. J. Babtet of the Institut Pasteur de Hanoi, kindly sent us two strains of *B. proteus X 19*, named "Metz" and "Syrie", respectively. They had been supplied to him from the Pasteur Institut in Paris.

These two strains grow on agar as a spreading film. The organisms are gram-negative and motile. They produce indol in peptone water. They ferment saccharose, glucose and maltose with the production of acid and a bubble of gas. They are clearly members of van Loghem's indologenes group of *B. proteus*.

They are agglutinated by the blood of persons with tropical typhus of the W. group. Metz was agglutinated at a titre of 1 in 4,000 and Syrie at 1 in 15,000, in a case where the strain "Warsaw" of the National Collection, was agglutinated at 1 in 8,000 on the twelfth day.

The strains Metz and Syrie are not agglutinated by the blood serum in tropical typhus of the K. group. The blood of a patient which agglutinated the strain *B. proteus* Kingsbury at 1 in 30,000, on the nineteenth day, did not agglutinate the strains Metz and Syrie, which are apparently identical with the strains Warsaw, No 67 and Jerusalem of the National Collection of Type Cultures at the Lister Institute in London.

MELIOIDOSIS.

There remains much to be learnt about melioidosis, but each year sees some small addition to our knowledge of this fatal malady. In this report we have to record the discovery of its existence in Indo-China; its natural occurrence in a dog; and a case of infection through a superficial ulcer in a man.

Until this year, the disease has not been described as occurring outside the comparatively narrow limits of Burma and the Malay Peninsula. Recently it has been discovered, however, that melioidosis occurs in French Indo-China. In January, 1926, Dr. F. H. Guerin, Director of the Pasteur Institute at Saigon, very kindly sent us a culture of *B. whitmori*, the causative organism of this fatal malady, which had been isolated by Dr. R. Pons from the blood of an Annamite woman who died on the fourteenth of her illness. The biological characters and the pathological effects of this Saigon strain of *B. whitmori* were investigated in this laboratory, where it was found to be the most virulent strain of the organism from a human source, which has been encountered. In September we received another strain of *B. whitmori* from Saigon; it had been cultivated by Dr. Henry G. S. Morin from the blood of a European, who died shortly afterwards. The disease, in this instance, was so acute that there was little time for clinical observation. This is the second case, on record, of infection in a European.

In addition to human cases of the disease melioidosis has been found occurring naturally in the rat, rabbit, guinea-pig, cat and horse. During the current year, one more species was added to the list by the isolation of *B. whitmori* from the organs of a dog, dead of a distemper, which had been sent to the Institute for examination by Major S. L. Symonds, B.V.Sc.

Bacillus whitmori was isolated from four cases, all of them fatal, admitted to hospitals in Kuala Lumpur during the year. An account of one of these is given here because it is the only clear case of infection through a skin wound which we have met with. The patient, in question, was a Tamil labourer, thirty-six years of age. He worked on the railway and lived in a hut near the Batu River in Kuala Lumpur, in a district called Kampong Semarang, where there are many rats. His illness was said to have begun with fever and headache on November 20th, 1926, and he was admitted to the District Hospital four days later. He had an ulcer on the right leg and a suppurating bubo, in the right groin, which was opened. He was constipated, on admission to hospital, but for five days before he died he had diarrhoea.

We did not see this patient until after his death, which occurred on December, 9th. There was an ulcer on the right leg which was healing at the edges, and a bubo, in the right groin which, had been opened. The iliac glands on the same side were enlarged and suppurating. The spleen was enormous and full of large and small abscesses. There were minute haemorrhagic areas in the lungs. The liver was enlarged and contained innumerable small abscesses. *B. whitmori* was isolated from the ulcer on the right leg and from the pus in the femoral and iliac lymphatic glands on the same side. It was also cultivated from the abscesses in the liver and the spleen.

The main point of interest in this case was the demonstration of the bacillus in the ulcer on the leg which was evidently the point of inoculation; the infection having spread by way of the lymphatics to the femoral and lymphatic glands. In Bulletin No. 5 of this Institute, published in 1924, we stated that we had not met with a case in which there was any history or evidence of a primary local lesion. On the other hand, infection appears to have gained entry through a skin lesion in a large proportion of the cases of melioidosis observed by Whitmore, Knapp and Krishnaswamy in Rangoon. Many of their patients were morphia-injectors, and they suspected that the virus was carried by the syringe.

LEPTOSPIROSIS.

Leptospiras belong to the group of spiral organisms which includes *spirochaeta* and treponema. They are accepted as the cause of the following diseases, infectious jaundice (*spirochaetosis icterohaemorrhagica*), the seven-day fever of Japan (*nanukayami*), the autumn fever of Japan (*akiyami A*) and as the probable cause of yellow fever.

In the report of this Institute for the first six months of the year 1925, we announced that the presence of leptospirosis in the Malay Peninsula, which had been suspected for a long time, had at length, been proved by the cultivation of leptospiras from the blood of a patient in the Malay Hospital at Kuala Lumpur, in the month of April, and by the passage of the organism through a series of guinea-pigs. Three additional cases were met with before the close of the year.

During 1926 the energy of the staff has been directed, so far as routine duties have permitted, to the investigation of this disease and more especially to determine if leptospiras are the cause of one disease in this country or of several.

The organisms have been isolated from nine patients in Kuala Lumpur during the year 1926, and in addition there has been a number of cases of severe jaundice, many of them fatal, from which we have not been successful in cultivating them. Several similar cases have occurred recently in the neighbourhood of Ipoh and Dr. P. H. Hennessy has sent us guinea-pigs inoculated with the blood of some of them but none of the animals succumbed to infection.

Dr. H. Noguchi of the Rockefeller Institute, Professor Inada of the Imperial University, Tokio, and Dr. C. C. Okell, of the Wellcome Research Laboratories, have kindly sent us strains of leptospiras for comparison with those isolated locally.

We are still at the beginning of our work, but, from what has been accomplished so far, it appears that there are several diseases in this country which are due to leptospiras, and that infectious jaundice, seven-day fever and autumn fever all occur here in addition to another unclassified group. We have been unable to distinguish, by serological means, the leptospirae of infectious jaundice from the *leptospira icteroides* which Noguchi considers to be the cause of yellow fever.

MEASLES.

Dr. A. N. Kingsbury has investigated the prophylactic action of convalescent serum in measles and he reports as follows:

The use of convalescent serum as a prophylactic during epidemics of measles was mentioned in the previous report. Groups of children numbering 93, 132, 50 and 120 were given 2.0, 2.5, 3.0 and 3.5 c.cms. of serum, respectively. During the seven weeks following inoculation the incidence of measles in these groups was 15 per cent., 4.5 per cent., 14 per cent. and 1 per cent. Cases continued among adults and uninoculated children after the last cases in the inoculated groups so that opportunity for infection was not lacking.

Prophylactic serum is generally believed to confer a passive immunity for about two to three months. Secondary outbreaks of measles on some of the rubber estates resulted in a much lower incidence among inoculated than among non-inoculated children although an interval of over four months had elapsed from the date of the original treatment. Also the clinical course in inoculated children was milder than in the controls.

PNEUMONIA.

In July and August there was an outbreak of pneumonia in the police-barracks at Kuala Lumpur in consequence of overcrowding. There were six deaths between August 3rd and September 4th. In addition to these fatalities, one or two of the recruits died in their homes, to which they had been taken by their parents who surreptitiously removed them from the hospital in the night, and took them away in bullock-carts under cover of darkness. Those who died were young Malay boys from distant villages and only one had more than four months service.

At the time of the outbreak, the number of recruits in the barracks was considerably in excess of the accommodation provided. In one badly ventilated, low-ceilinged dormitory, on the ground floor, seventy recruits were crowded into a space which should not have held more than forty-four. It was in this room that most of the cases occurred. The epidemic ceased when emergency measures were undertaken to obviate the overcrowding, by housing some of the men in schoolrooms and other buildings. Epidemics due to overcrowding have occurred in these barracks before—there have been at least two outbreaks of cerebro-spinal meningitis—and they will continue to occur until proper accommodation is provided for the recruits.

THE BACTERIOPHAGE IN BACILLARY DYSENTERY.

Dr. F. d'Herelle, Chief of the bacteriological service of the Sanitary Maritime and Quarantine Council of Egypt, has been good enough to send us a supply of his bacteriophage for the treatment of bacillary dysentery. He describes it as an ultravirus parasitic on bacteria. It has been employed with great success in some countries, notably in Brazil, where it is said that there was not a single death in the first ten thousand cases of dysentery treated at the Oswaldo Cruz Institute in Rio de Janeiro.

We were eager to put the bacteriophage to the test because bacillary dysentery is one of the most serious diseases in the Federated Malay States, and because no treatment adopted hitherto has had any apparent influence in curing or mitigating the disease amongst the poorer classes who are its principal victims.

The bulk of the dysentery in this country is due to infection with organisms of the Flexner group and we have investigated the action of the bacteriophage in this type of disease. The result of this investigation will be reported in Bulletin No. 3 of the Institute for Medical Research in 1927. The bacteriophage has not proved satisfactory and Dr. d'Herelle is about to undertake the preparation of a fresh sample from cultures of strains, isolated in Kuala Lumpur, which we have sent to Alexandria where he is working. Dr. d'Herelle is visiting India, shortly, and the Government of the Federated Malay States has invited him to visit this country at the same time.

The following is a summary of the work done in connexion with the bacteriophage during the past year.

Summary.—A supply of the bacteriophage was received from Dr. F. d'Herelle. The majority of the deaths from dysentery in the Malay States are due to organisms of the Flexner group: infections with Shiga's bacillus are uncommon. The bacteriophage was administered to twenty-two men suffering from dysentery caused by bacilli of the Flexner group. A bacteriological examination of their faeces was made every day. Dysentery bacilli persisted in the faeces of six patients for more than ten days after the commencement of treatment. In eleven cases, the bacilli were found up to the sixth day but not after the eighth. In the remaining five cases they were not found after the fourth day. Three patients died during treatment; healthly dysentery bacilli were isolated from their intestines after death. The organisms isolated from the faeces of these twenty-two patients, and from the intestines of the fatal cases, had the usual features of normal dysentery bacilli in appearance, growth, agglutination and carbohydrate reactions. The action of the bacteriophage upon Andrewes's type strains was tested *in vitro*. It was rather more virulent for these than for freshly isolated strains. When the bacteriophage was added to broth cultures of freshly isolated dysentery bacilli, a few organisms survived in each case, but the resulting "mixed cultures" had little vitality, as a rule; and they were generally non-agglutinable by specific sera. Only a single case of dysentery due to Shiga's bacillus was available for treatment with the bacteriophage. In this instance, no dysentery bacilli were isolated after the second day of treatment. The action of the bacteriophage upon Shiga's bacillus, *in vitro*, was much stronger than its action upon organisms of the Flexner group.

Conclusions: The sample of bacteriophage employed in the treatment of twenty-two cases of bacillary dysentery due to organisms of the Flexner group had no apparent influence either upon the course of the disease or upon the infecting bacilli.

(*Cultures of the dysentery bacilli isolated from these patients have been forwarded to the Curator of the National Collection of Type Cultures at the Lister Institute, London*).

DIPHTHERIA.

Diphtheria was almost unknown in the Federated Malay States before the war; but during the last decade it has become comparatively common. Thirty-five cases were diagnosed in the laboratory during the year 1926.

A special investigation of this disease has been made during the last two-and-a-half years and a report will be issued as Bulletin No. 2 of the Institute for Medical Research in 1927. As the result of this investigation we are of opinion that:

(1) Diphtheria has been endemic for many years.

(2) Carriers are common.

(3) The population is highly immune.

(4) There is no evidence that the local strains of *C. diphtheriae* are less virulent than those isolated in other countries.

The following is a summary of the report:

Summary.—The older practitioners in the Federated Malay States testify to the almost complete absence of diphtheria until recent years. Unconnected sporadic cases occurred at long intervals and four were recorded in Kuala Lumpur between the years 1904 and 1908. The disease has been more common since 1916, but cases are not numerous. It was difficult to explain why the sporadic cases never gave rise to an epidemic, and this investigation was undertaken, in the course of routine work, to determine if the population is as susceptible as it was supposed to be.

It is unusual for more than one case to occur in a family. In eighty-eight cases there were seventy-six instances in which no other member of the household became ill. There were sometimes many carriers in the house where the patient lived, and in the Malay States, as elsewhere, the common origin of the case is undoubtedly the carrier. The proportion of carriers to cases is an index of the immunity of the population. The results of the examination of school children and contacts suggest that diphtheria has been endemic for a long time and that a high degree of immunity is present.

The age incidence of diphtheria affords yet further proof of its endemicity and of the consequent immunity of the population. In an unprotected community all ages suffer, but adult cases are rare in the Asiatic population of the Malay States. They are more common in Europeans.

The bacteriological examination of contacts is of very little practical value, because of the great difficulty of keeping in touch with carriers.

The case mortality and the results of animal inoculations show that the toxigenicity of the local strains of diphtheria is not less than the toxigenicity of those isolated in other countries.

The results of Shick tests clinched the evidence that the population is highly immune to diphtheria. The proportion of susceptible children in two large day-schools attended by the children of better class parents is almost the same as in the mixed schools of New York. Tests which were made in two schools for Malay boys, showed that they were less susceptible than children of the same age in Europe and America.

Diphtheria is almost unknown among the labour forces employed on rubber estates and tin mines. A hundred adults were tested in an institution for decrepit Tamils, mostly from rubber estates, with the result that only two susceptible persons were found among them.

The immunity of the population is evidently of long standing. Possibly diphtheria has always been present among the Malays, but no outbreaks have come to official notice. The immunity may have been produced by diphtheritic inflammation of some part of the body other than the respiratory tract. Bacilli morphologically identical with *C. diphtheria* and having the same action on carbohydrates, are commonly found in the ulcers to which the labouring classes are susceptible, but the strains which we isolated were not toxigenic and there is no evidence that they were in any way connected with diphtheria.

ENTERIC FEVERS.

The number of blood-specimens sent to the Institute for Medical Research, to be examined for typhoid fever by the agglutination test, grows steadily larger, and the positive results increase year by year. On this account an investigation has been made during the two years 1925 and 1926 to determine if enteric fevers are prevalent in the Malay States and if they are becoming more common. It may be said at once that, judging from the results of this enquiry, typhoid fever is not common in the Federated Malay States and paratyphoid is rare. There has been no epidemic during the twenty-three years which have elapsed since the writer first came to the country, and Dr. G. A. Finlayson, who was Government Pathologist of Singapore, for over twenty years, states that the same is true of the Straits Settlements.

It is probably correct to attribute this freedom to the comparatively even distribution, throughout the year of a heavy rainfall which amounts to more than a hundred inches. The hot sunshine all the year round and the scarcity of flies doubtless play their part and, as far as the rivers are concerned, Dr. A. R. Wellington. the Senior Health Officer, has suggested that the colloidal clay suspended in their waters may be an important factor in their purification. Most of the towns and larger villages are fortunate in having excellent public supplies of water, drawn from uninhabited, jungle-clad hills. There are no large dairy-companies distributing milk collected from many sources and, in consequence, the carrier has less chance of disseminating bacilli here, than in a western city.

The statement that typhoid is uncommon, is justified not only by the absence of the disease in epidemic form, but also by the rarity with which it is found in the post-mortem room and by the scarcity of carriers. Typhoid ulcers have been found only three times in two thousand post-mortem examinations made by members of the Institute staff, during the last six years.

During the same period, that is to say, from 1921 to 1926, a bacteriological examination was made of 4,045 specimens of faeces, but only three carriers were found; giving a rate of 0.74 per cent. The great majority of the specimens were from the dysentery wards of hospitals in Kuala Lumpur and they were plated out on Harris and Teague's eosin methylene-blue agar within a short time after collection.

A carrier rate of less than 0.1 per cent. is extremely low; it may be mentioned, by way of contrast, that the examination of the general population, for typhoid carriers, in various districts of the United States, by means of a single examination of the faeces, gave an incidence of 0.3 to 0.8 per cent. S. W. Walch and his colleagues recently made a bacteriological survey of 1,076 healthy persons connected with the dairy industry in Alabama, and, by means of a single examination of the faeces they found eleven carriers, a rate of 1 per cent.

One of the three carriers found in the Malay States was a European, one a Chinese and one a Tamil. The European's faeces were sent for examination because he was suffering from dysentery. *E. histolytica* was found by microscopical examination and *B. typhosus* was isolated by culture. He had no symptoms of typhoid fever, nor had he ever suffered from that disease so far as he knew. Four specimens were examined in March, 1925, one in April, one in September and two in November, with positive results each time, except on one occasion in March. This man was still a carrier of typhoid bacilli at the end of 1926, but he is not known to have infected anyone else. As Walch states, "no outbreak can be traced to the majority of carriers, but it must be assumed for administrative purposes, that every person who harbours typhoid bacilli, is a potential producer of disease." If there were a test to determine the virulence of typhoid cultures it might be found that the organisms in many carrier cases, were harmless. Two urinary carriers in Walch's series, a man and his wife, had owned and worked a dairy for at least five years without, so far as could be ascertained, causing a single case of disease.

The population of the Federated Malay States is about one-and-a-half millions, and nearly one hundred thousand persons are treated in Government hospitals every year. Enteric fever was diagnosed by laboratory methods in eighty-seven cases during 1925 and in one-hundred-and-nine cases during 1926. These figures do not, of course, represent the total number of cases occurring in the whole of the Federated Malay States, but they doubtless include the majority of those admitted to Government hospitals. It is probable that at least one-tenth of the cases in the country come to our notice and that less than a thousand persons contract typhoid fever in a year, throughout the whole of the Federated Malay States.

When one speaks of a disease being common or rare in a country, one means that it is common or rare in comparison with its incidence in other countries, and, with respect to enteric fevers, it is illuminating to compare the Federated Malay States with the colony of Barbados. In the Annual Health Report for the year 1924-25, it is stated that "Barbados enjoys natural and climatic advantages, from a health standpoint, such as can scarcely be found in any other tropical place. The soil is well drained and the water supply is very good". The average number of cases of enteric fever *notified* during the last five years was 1,332 per annum. The population of the colony is entimated at 159,499 or about one-tenth of that of the Federated Malay States. Consequently, if enteric fever were as prevalent here as it is in the Barbados some thirteen thousand cases would occur every year.

The important question, whether typhoid fever is becoming more common in the Malay States, as indeed some people believe it is, cannot be answered satisfactorily except with the help of accurate statistics, and these are not available. The Senior Medical Officers in charge of the several States were kind enough to supply us with lists, of the cases of typhoid, sent to them from the Government hospitals, but the inaccuracy of these lists made them useless; many patients were omitted who had been shown by bacteriological examination to be infected with typhoid, and others were included who had been found free from the disease by repeated agglutination tests. Typhoid fever is not included in the list of notifiable diseases and consequently some Medical Officers do not notify their cases.

Though trustworthy statistics, giving the incidence of typhoid over a number of years, are not available, there is indirect evidence which shows that it is unlikely that the disease is becoming more prevalent; the bulk of the cases, proved by bacteriological examination, do not come from the large and growing towns, but from the outstations and villages, such as Kuala Pilah, where there is less change and where progress is not so rapid.

The Widal Test.—It was the custom in the past for Medical Officers, who sent specimens of blood to the laboratory for agglutination tests, to receive in return the bald information that the agglutination test was positive or negative, as the result of the examination of a single specimen. This was misleading and dangerous; in some cases where the agglutination was positive, this result was due to prophylactic inoculation or to a previous attack of typhoid; in others, the test was negative because the blood had been collected during the early days of the disease, before the agglutinins had appeared. During the last two years we have tried to make the laboratory diagnosis more accurate by obtaining at least three specimens of blood from each patient. The waxing and waning titre of agglutination obtained by the examination of several samples of blood, collected at intervals during the course of the disease, is a very valuable aid to diagnosis. The trustworthiness of the agglutination curve, obtained in this way, and the fallibility of a single test, are illustrated by the following example. The first specimen of blood, taken from a certain Tamil patient, gave a negative result, it had been collected on the eighth day of illness; the next sample, collected on the twelfth day, agglutinated *B. typhosus* in dilution of 1 in 240; on the eighteenth day agglutination took place at 1 in 2,000; on the twenty-fifth day at 1 in 3,000, and on the thirty-fourth day at 1 in 250. As a rule, the agglutinins appear towards the end of the second week, reach their maximum in the fourth week and then decline.

The Examination of Excreta.—We tried to obtain three specimens of faeces and urine from each case in which the agglutination test was positive and, in the majority of the cases, the Medical Officers sent the necessary material; but in a few instances repeated requests were unavailing. A sound judgment cannot be given unless the evidence has been carefully collected; the most important part in diagnosis is the provision of suitable specimens for examination and the correlation of the results obtained in the laboratory with the clinical history of the patient. The routine laboratory tests are comparatively simple.

The majority of the specimens were sent to us from a distance, and were not less than twenty-four hours old when they were examined. Experience has shown that it is useless to expect to find typhoid bacilli in material which has been kept for this length of time in a tropical climate, and, in order to overcome the difficulty, small sample of faeces were sent to the laboratory, by post, in tubes containing Teague and Clurman's solution (sodium chloride 0.6 gramme. Glycerine 30 cc. water 70 cc.). The results of this method were most satisfactory. The excreta were obtained, on one or more occasions, in 144 cases where the result of the agglutination test was positive, and in ninety-two, or 63 per cent., the infecting organism was isolated; from the faeces in seventy-six, from the urine in fourteen, and from both urine and faeces in two. All the specimens except thirty-three had been sent from a distance and were one or two days old before they were examined. The bacilli were isolated from the first specimen received in seventy-two cases; from the second specimen in sixteen; from the third, or a later specimen in five.

The Number of Positive Cases.—A positive diagnosis was made on firm grounds, by the procedure which we have described, in 196 cases during the two years 1925 and 1926. One hundred and eighty-two of them were suffering from typhoid fever, nine from paratyphoid A. and five from paratyphoid B. The diagnoses were based on the following results:

B. typhosus was isolated in	83
B. paratyphosus A. was isolated in	6
B. paratyphosus B. was isolated in	3
Typhoid was diagnosed from the agglutination curve in	56
Typhoid was diagnosed from a single agglutination with a titre above 1/1,000 in	43
Paratyphoid B. was diagnosed from the agglutination curve in ...	2
Paratyphoid A. was diagnosed from the agglutination curve in ...	3
	196

The Incidence of the Disease.—As we have remarked before, the majority of the cases did not come from the big hospitals in the large towns, but from the smaller agricultural centres.

Number of cases from Perak—

Taiping	19
Ipoh	14
Rest of Perak	37
	70

Number of cases from Selangor—	
Kuala Lumpur	33
Rest of Selangor	37
	70
Number of cases from Negri Sembilan—	
Seremban	23
Kuala Pilah	14
Rest of Negri Sembilan	5
	42
Number of cases from Pahang—	
Whole State	3
Number of cases from Kedah—	
Whole State	2

Dysentery of the Shiga type is more common in the clusters of native houses, known as *kampongs*, than it is in the towns, and the same is true of typhoid fever. The inhabitants of these kampongs are accustomed to take their drinking water from a shallow well or from a river flowing past the kampong; and where they drink they generally wash themselves and their clothes. Typhoid is not common among the Chinese who work in the tin mines or among the Tamil labourers on rubber estates.

The distribution of the disease among people of different races was as follows:

Tamils	83
Chinese	66
Malays	25
Europeans	10
Punjabis	6
Eurasians	4
Others	2
	196

The figure for Malays is rather high in proportion to the number of them admitted to Government hospitals. Probably this is because typhoid is a disease of the kampong rather than the town.

The Mortality.—The case mortality was about the same as in other countries; not more than twenty-six cases or 13 per cent. were fatal, and this is in spite of the fact that nursing, as nursing is understood in Europe, is hardly practicable in the wards of a native hospital. An Assistant Surgeon naively reported concerning one of his typhoid patients "he is delirious and leaves the bed and roams about".

Comparative Table for the Two Years 1925-1926.

B. typhosus isolated	34 ...	49
Typhoid diagnosed by agglutination	46 ...	53
B. paratyphosus A. isolated	4 ...	2
Paratyphoid A. diagnosed by agglutination ...	— ...	3
Paratyphosus B. isolated	2 ...	1
Paratyphoid B. diagnosed by agglutination ...	1 ...	1
	87	109

PASTEUR INSTITUTE.

A department of the Institute was opened in August, 1924, for the prophylactic treatment of rabies. Carbolized vaccine containing 1 per cent. of nervous tissue in 0.5 per cent. carbolic saline is employed for the treatment of human cases. A full course consists of fourteen daily injections of 5 c.cm. A prophylactic vaccine is prepared for dogs which consists of 20 parts of nervous tissue, 48 parts of glycerine and 32 parts of a 1.25 per cent. solution of phenol in salt-solution. The treatment

consists of a single injection of 6 cubic centimetres. Two strains of fixed virus are employed in the preparation of the vaccine. One of these, the "C" strain, was obtained from the Pasteur Institute at Coonoor and originally came from the Pasteur Institute in Paris; the other, strain "L", was obtained from Colombo.

Dr. A. N. Kingsbury was in charge of the Pasteur Institute for the first four months of the year; since April, Dr. Richard Green has carried on the work with Assistant Surgeon K. Kanagarayer as his assistant. Dr. Green reports as follows:

Treatment of Patients.—During 1926, 183 persons applied for treatment, an increase of sixty over the previous year. One hundred and twenty of them received the full course of fourteen injections; in the remaining cases, nine of whom underwent an incomplete course, it was ascertained that the suspected animals, with which the patients had been in contact, were not suffering from rabies.

Sixty-two, of the 129 cases which were treated, had been bitten by dogs proved by laboratory tests to have been rabid or certified as rabid by Medical or Veterinary Officers; thirty-four had recent abrasions contaminated by saliva from proved rabid animals and thirty-two had been bitten by dogs that were regarded as rabid but which could not be traced. A Malay girl was bitten by a monkey which was killed later. Smears from the monkey's brain showed the presence of Negri bodies, and the girl received a course of treatment. A kitten was diagnosed as suffering from rabies by the Pathologist, Penang, and two Europeans, who were in prolonged and dangerous contact with the kitten, received a full course of treatment.

Rabies in Malacca.—It was decided, early in the year, to establish a branch treatment centre in Malacca, on account of the number of cases of rabies occurring there, and the Acting Pathologist, Malacca, came to the Institute for a course of instruction.

A full course of injections was given to five Europeans, fifteen Chinese and two Indians in Malacca; that is, twenty-two cases apart from those already mentioned as having been treated at the Institute for Medical Research, making a total of 142 cases.

Table I shows the cases grouped according to race and domicile. Table II shows the cases treated at Malacca after the establishment of the local centre there. Fifty-eight per cent. of the patients, who received a full course of treatment, were sent from the State of Kedah; only 22 per cent. belonged to the Federated Malay States and most of these were from Negri Sembilan.

PASTEUR INSTITUTE.

Table I.

Cases Grouped According to Domicile and Nationality.

1926 (12 months).	Nationality.	Selangor.	Perak.	Negri Sembilan.	Singapore.	Penang.	Malacca.	Kedah.	Total.
Complete course of treatment	European ...	...	1	3	...	2	2	4	120
	Eurasian ...								
	Malay	...	...	8	...	...	...	16	
	Chinese ...	5	...	1	...	...	...	24	
	Indian	4	...	10	...	...	1	39	
Incomplete course of treatment	European ...	...	...	...	...	...	...	...	9
	Eurasian ...	...	...	...	...	...	...	...	
	Malay	...	...	1	...	...	...		
	Chinese ...	2	...	1	...	...	...	1	
	Indian	3	...	...	...	...	...	1	
Advice only	European ...	1	...	...	...	...	...		54
	Eurasian ...	2	...	...	...	...	...		
	Malay	3	...	...	...	...	...		
	Chinese ...	17	...	...	...	...	...		
	Indian	31	...	...	...	...	...	...	
Total for 1926	...	68	1	24	...	2	3	85	183

TABLE II.

CASES TREATED IN MALACCA, 1926.

	Nationality.	Number of cases treated.	Total.
Complete course of treatment	European	5 ...	22
	Eurasian	... ...	
	Malay	... ...	
	Chinese	15 ...	
	Indian	2 ...	

Results of Treatment.—Twenty-nine of the patients were bitten by animals proved to be rabid by laboratory tests, and thirty-four had recent abrasions probably contaminated with the saliva of such animals. None of these patients developed rabies. The close co-operation of the Veterinary Surgeons with the Pasteur Institute has been of the greatest value in tracing cases bitten by dogs, securing material for diagnosis and in keeping records.

TABLE III.

SHOWING RESULTS OF TREATMENT DURING 1926 AT PASTEUR INSTITUTE.

Position of bite.	I.	II.	III.	IV.	V.	VI.	Total.	Number of deaths during or after treatment.
Face	1	5	...	1	1	...	8	
Limbs and trunk unclothed	20	24	...	32	22	...	98	
Limbs and trunk through clothing	8	4	...	1	9	1	23	
Total ...	29	33	...	34	32	1	129	Nine received only a partial course of treatment

I. Cases bitten by animals proved rabid by laboratory examination.
II. Cases bitten by animals certified rabid by Medical or Veterinary Officer. No laboratory tests.
III. Cases bitten by animals almost certainly rabid according to history. No laboratory tests.
IV. Cases with recent abrasions contaminated with the saliva of proved rabid animals.
V. Cases bitten by animals which were untraceable.
VI. Cases having abrasions contaminated with saliva of animals in which laboratory tests were negative.

TABLE IV.

SHOWING RESULTS OF TREATMENT IN MALACCA CASES.

Position bite.	I.	II.	III.	IV.	Total.	Deaths.
Face	1	...	...	...	1	
Limbs and trunk unclothed	2	2	12	3	19	
Limbs and trunk clothed	2	...	...	...	2	

I. Cases bitten by dogs proved rabid by laboratory examination.
II. Cases bitten by dogs almost certainly rabid according to history. No laboratory tests.
III. Cases which had recent abrasions contaminated with the saliva of dogs proved rabid by laboratory examination.
VI. Cases which had been in contact with a case of human rabies.

Case of Human Rabies.—Only one case of human rabies came to our notice during the year. This was a Chinese in Malacca who had received no prophylactic treatment. Full details are not available but there seems to be no doubt about the correctness of the diagnosis. The history was briefly as follows: Swee Tan, a male Chinese, age 42, was bitten by a dog in China about November 1st, 1926. The dog was said to have been mad. About twenty-five days later the patient arrived in Singapore and soon afterwards went to Malacca where he became very ill, and was admitted to hospital in Malacca. His temperature on admission was 100°F. and the pulse rate 120. His most striking symptoms were excessive salivation and recurrent spasms of the pharynx. Food, drink or a sudden stimulus excited the pharyageal spasms and a diagnosis of rabies was made on clinical grounds. The patient died on the 1st December, 1926, about one month after having been bitten. A post-mortem examination was not obtainable.

Rabies in Dogs.—The brains of ninety-four dogs were submitted to the Pasteur Institute for diagnosis. Forty-eight contained Negri bodies in fresh smear preparations, and the diagnosis was confirmed by the examination of stained sections. Forty-six of the specimens were negative.

TABLE V.

EXAMINATION OF BRAINS FOR NEGRI BODIES, 1926.

Selangor.		Perak.		N. Sembilan.		Penang.		Malacca.		Kedah.		Total positive.	Total negative.	Grand total.
+	—	+	—	+	—	+	—	+	—	+	—			
	2		1	15	13		1	11	13	22	16	48	46	94

Prophylactic Inoculation of Dogs.—A vaccine for the prophylactic inoculation of dogs is prepared at the Institute, and four hundred doses were supplied to the Veterinary Officers in various parts of Malaya during 1926.

In Negri Sembilan 270 dogs were inoculated, in Kedah 82, in Selangor 23, in Malacca 16, and in Penang 9. Approximately four hundred dogs thus received protective inoculations. One apparent failure was reported from Negri Sembilan in the case of a dog which was vaccinated and which developed rabies; the diagnosis being confirmed, subsequently, by microscopic examination of the animal's brain. The period from the date of inoculation to the onset of symptoms was about three months. As there was some doubt as to the identification of the dog, the failure of the vaccine is recorded as apparent only. Some of the dogs vaccinated have been quarantined for a period of six months after inoculation, in these no abnormal symptoms have developed.

MORBID HISTOLOGY.

Dr. R. Green who was responsible for this work during the last eight months of the year reports as follows:

Sections of 195 specimens from various hospitals in the Federated Malay States were cut and examined. Details of the benign and malignant tumours are given in the following tables:

TABLE I.

BENIGN TUMOURS.

Case No.	Nationality.	Serial No.	Sex.	Age.	Site of tumour.	Nature of tumour.
1	Chinese ...	12	F.	40	Nasal cavity	Fibroma
2	,, ...	156	M.	50	Brain	Glioma
3	,, ...	51	F.	38	Vulva	Papilloma
4	,, ...	60	F.	2	Sacrum	Teratoma
5	,, ...	69	M.	30	Tongue	Papilloma
6	,, ...	92	F.	33	Uterus	Fibro-myoma
7	,, ...	111	F.	37	Breast	Adeno-fibroma
8	,, ...	157	M.	—	Paraspinal region ...	Dermoid cyst
9	,, ...	160	M.	36	Neck	Soft fibroma
10	,, ...	169	F.	23	Lip	Cavernous lymph-angioma
11	Tamil ...	28	M.	40	Peri-articular region	Fibroma
12	,, ...	41	M.	33	Skin	Molluscum contagiosum
13	,, ...	173	M.	25	Axilla	Haemangioma
14	,, ...	177	M.	25	Gums	Fibroma
15	,, ...	191	M.	18	Tarsal conjunctiva ...	Polypus
16	Malay ...	20	M.	—	Ear	Fibroma
17	,, ...	77	M.	26	Axilla	Fibroma
18	,, ...	119	F.	52	Alveolar margin ...	Haemangioma
19	Burmese ...	154	F.	20	Ovary	Teratoma
20	Eurasian	86	M.	30	Inguinal canal ...	Fibroma
21	,, ...	129	F.	23	Alveolar	Fibrous epulis
22	European	24	F.	40	Breast	Fibro-adenoma
23	,, ...	87	F.	28	,, ...	,,
24	,, ...	192	M.	29	Penis	Papilloma

TABLE II.

MALIGNANT TUMOURS.

Case No.	Nationality.	Serial No.	Sex.	Age.	Site of tumour.	Nature of tumour.
1	Chinese ...	4	M.	61	Liver	Secondary carcinoma
2	,, ...	8	M.	50	Cheek	Epithelioma
3	,, ...	16	M.	26	Anus	,,
4	,, ...	17	M.	32	Stomach	Adeno-carcinoma
5	,, ...	22	M.	24	Liver	Primary carcinoma
6	,, ...	26	M.	53	Thyroid	Malignant papilloma
7	,, ...	27	M.	38	Testis	Sarcoma
8	,, ...	31	M.	59	Kidney	Hypernephroma
9	,, ...	32	M.	39	Neck	Mixed celled sarcoma
10	,, ...	33	M.	80	No site given ...	Alveolar sarcoma
11	,, ...	37	M.	—	Femur	Giant celled sarcoma
12	,, ...	43	M.	40	Rectum	Adeno-carcinoma
13	,, ...	44	M.	54	Stomach	Carcinoma
14	,, ...	45	M.	43	Liver	Secondary carcinoma
15	,, ...	46	M.	51	Cheek	Epithelioma
16	,, ...	48	M.	56	Lungs, liver and spleen	Endothelioma
17	,, ...	54	M.	48	Stomach	Carcinoma
18	,, ...	58	M.	37	Tonsils and cervical gland	Scirrhus carcinoma
19	,, ...	66	M.	54	Neck	Mixed celled sarcoma
20	,, ...	70	M.	45	Parotid	Endothelioma
21	,, ...	82	M.	50	Retro-peritoneal glands	Lympho-sarcoma
22	,, ...	83	M.	50	Ankle	Epithelioma
23	,, ...	84	M.	52	Oesophagus	Squamous-celled carcinoma
24	,, ...	89	M.	48	Rectum	Carcinoma
25	,, ...	65	M.	52	Liver	Primary carcinoma
26	,, ...	98	M.	57	Orbit	Angio-sarcoma
27	,, ...	106	F.	57	Vulva	Epithelioma
28	,, ...	110	M.	49	Neck	Mixed celled sarcoma
29	,, ...	115	M.	44	Liver	Primary sarcoma
30	,, ...	117	M.	48	Neck	Sarcoma
31	,, ...	118	M.	53	Naso-pharynx ...	Myxo-sarcoma
32	,, ...	120	M.	45	Penis	Epithelioma
33	,, ...	121	M.	44	Parotid	Endothelima
34	,, ...	97	M.	34	,, ...	,,
35	,, ...	126	F.	46	Abdominal wall ...	Fibro-sarcoma
36	,, ...	128	M.	34	Leg	,,
37	,, ...	131	F.	11	Liver	Primary sarcoma
38	,, ...	135	M.	41	,, ...	Primary carcinoma
39	,, ...	137	M.	43	Neck	Endothelioma
40	,, ...	143	M.	60	Perineum	Round celled sarcoma
41	,, ...	150	M.	47	Pleura	Endothelioma
42	,, ...	153	M.	45	Bowel	Lympho-sarcoma
43	,, ...	158	M.	56	Kidney	Hypernephroma
44	,, ...	165	M.	50	Lung	Secondary sarcoma
45	,, ...	167	M.	32	Parotid region ...	Endothelioma
46	,, ...	170	F.	52	Cervix uteri	Columnar celled carcinoma
47	,, ...	178	M.	46	Cervical glands ...	Sarcoma
48	,, ...	181	M.	56	Pylorus	Scirrhus-carcinoma
49	,, ...	183	M.	45	Liver	Primary carcinoma
50	,, ...	184	M.	38	Cervical glands ...	Secondary carcinoma
51	,, ...	185	M.	49	Ulcer of neck ...	Carcinoma
52	,, ...	190	M.	34	Skin	Epithelioma
53	,, ...	195	M.	32	Penis	,,
54	Tamil ...	7	M.	30	Anus	,,
55	,, ...	19	M.	48	Penis	,,
56	,, ...	21	M.	23	,, ...	,,
57	,, ...	29	M.	23	,, ...	,,
58	,, ...	39	M.	30	Bones	Periosteal sarcoma
59	,, ...	55	F.	—	Lower jaw	Sarcoma
60	,, ...	57	M.	40	Bowel	Adeno-carcinoma
61	,, ...	59	M.	40	Lung	Primary sarcoma
62	,, ...	67	M.	60	Lower jaw	Sarcoma
63	,, ...	71	M.	38	Right foot	Mixed celled sarcoma

TABLE II—(*cont.*).
MALIGNANT TUMOURS—(*cont.*).

Case No.	Nationality.	Serial No.	Sex.	Age.	Site of tumour.	Nature of tumour.
64	Tamil ...	72	F.	35	Tongue	Epithelioma
65	,, ...	80	F.	55	Inguinal region ...	,,
66	,, ...	106	M.	55	Penis	,,
67	,, ...	122	M.	35	Cheek	,,
68	,, ...	127	F.	50	,, ...	,,
69	,, ...	139	M.	55	,, ...	Squamous celled carcinoma
70	,, ...	159	M.	45	Liver	Primary carcinoma
71	,, ...	188	M.	30	Rectum	Carcinoma
72	Malay ...	25	F.	50	Lip	Epithelioma
73	,, ...	35	F.	40	Ulcer on arm ...	,,
74	,, ...	50	F.	65	Cervix uteri	Carcinoma
75	,, ...	74	F.	50	Sub-maxillary region	Adeno-carcinoma
76	European	3	M.	41	Lower lip	Epithelioma
77	,, ...	101	M.	—	Neck	,,

ROUTINE EXAMINATIONS.

	1925.		1926.
VENEREAL DISEASES.—			
Wassermann Reactions—			
Positive	2,174	...	1,717
Negative	4,685	...	4,404
Treponema pallidum—			
Positive	1	...	3
Negative	5	...	10
Gonococcus—			
Positive	6	...	1
Negative	20	...	12
WIDAL REACTIONS.—			
Positive for *B. typhosus*	302	...	197
,, ,, *B. paratyphosus A.*	3	...	4
,, ,, *B. paratyphosus B.*	17	...	10
Negative	814	...	1,033
*WEIL-FELIX REACTIONS	—	...	1,259
CEREBRO-SPINAL FLUID.—			
Positive for *Meningococcus*	9	...	20
,, ,, *Pneumococcus*	12	...	17
,, ,, *B. infleunzae*	1	...	2
,, ,, *B. tuberculosis*	—	...	2
Negative	39	...	21
CHOLERA.—			
Positive	176	...	156
Negative	518	...	536
PLAGUE.—			
Negative	12	...	2
DIPHTHERIA.—			
Positive	42	...	99
Negative	292	...	401
LEPROSY.—			
Positive	31	...	41
Negative	60	...	61
BACTERIOLOGICAL EXAMINATION OF FAECES.—			
Positive for *B. dysenteriae, Flexner*	106	...	250
,, ,, *B. dysenteriae, Shiga*	—	...	3
,, ,, *B. typhosus*	34	...	49
,, ,, *B. paratyphosus A.*	4	...	2
,, ,, *B. paratyphosus B.*	2	...	1
,, ,, *E. histolytica*	91	...	15
,, ,, *B. tuberculosis*	2	...	—
Negative	447	...	830

BACTERIOLOGICAL EXAMINATION OF URINE.—		
Positive for *B. typhosus*	10 ...	11
,, ,, *B. paratyphosus A.*	— ...	1
Negative	214 ...	308
AUTOGENOUS VACCINE	— ...	74
BLOOD-SUGAR ESTIMATIONS	— ...	170
LEPTOSPIROSIS.—		
Cultures—		
Positive	— ...	7
Negative	— ...	16
Urine—		
Positive	— ...	4
Negative	— ...	21
RATS.—		
Twenty-nine examined and cultures made with negative results in all		
MISCELLANEOUS	6,704 ...	7,048

* (*The above figures refer to the number of specimens examined not to the number of cases.*)

CHEMICAL LABORATORIES AND MALARIA BUREAU.

Reports on the work of the Chemical Laboratories by Mr. R. W. Blair, Chemist-in charge, and on the work on the Malaria Bureau by Captain H. M. Pendlebury, Acting Malaria Research Officer, are appended.

PUBLICATIONS.

The following publications were issued from the Institute during the year:

(*a*) *Studies from the Institute for Medical Research*:

No. 20. "Notes on Malayan Culicidae," by A. T. Stanton.

(*b*) *Bulletins from the Institute for Medical Research, 1925:*

No. 1. "The Weil-Felix Reaction in Sporadic Tropical Typhus," by William Fletcher and J. E. Lesslar.

No. 2. "Tropical Typhus and Brill's Disease," by William Fletcher and J. E. Lesslar.

(*c*) *Other Papers:*

"On the Carbon Tetrachloride Treatment of Ankylostomiasis," by A. Neave Kingsbury. *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 1926.

"Some Investigations of Malarial Fevers," by A. Neave Kingsbury. *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 1926.

"Three cases of Bronchial Spirochaetosis," by J. E. Lesslar and K. Kanagarayer. *The Indian Medical Gazette*, September, 1926.

"Tropical Typhus," by William Fletcher and J. E. Lesslar. *The Indian Medical Gazette*, November, 1926.

STAFF CHANGES.

Dr. A. Neave Kingsbury, the Pathologist, left in April to take up the appointment of Professor of Bacteriology in the College of Medicine at Singapore.

Dr. A. T. Stanton, the Director, retired at the end of June on being appointed Chief Medical Adviser to the Secretary of State for the Colonies.

Dr. William Fletcher, formerly the Bacteriologist, was appointed Director in August 11.

Captain K. B. Williamson left in September 24th on his appointment as Professor of Biology at the Medical College in Singapore. Since that time Captain H. M. Pendlebury, Systematic Entomologist in the Museum Department, has been in charge of the Malaria Bureau.

Mr. B. A. R. Gater, Assistant Entomologist, Department of Agriculture, was appointed a Malaria Research Officer on November 1st and went on furlough on December 18th.

INSTITUTE FOR MEDICAL RESEARCH,
KUALA LUMPUR,
January 31st, 1927.

WILLIAM FLETCHER,
Director of Government Laboratories,
Federated Malay States.

ANNUAL REPORT OF THE MALARIA BUREAU FOR THE YEAR 1926.

STAFF.

Capt. K. B. Williamson, Malaria Research Officer, Federated Malay States, relinquished his appointment on 24th September, 1926, and assumed duties as Professor of Biology in King Edward VII Medical College at Singapore. Mr. B. A. R. Gater, succeeded him on 1st November, and proceeded on long leave on 17th December, 1926. During the intervening periods of the year Mr. H. M. Pendlebury was in charge of the Bureau.

Mr. Thamboo, the Second Assistant, returned from long leave and resumed duty on 5th October, 1926. Mr. P. Savery and Mr. M. Sewell, protationary assistants, were transferred to the Medical Department, Singapore, and to the Railway Department, Kuala Lumpur, respectively. Mr. P. V. Samuel was appointed probationary assistant on 1st July, 1926.

I have to report, with regret, the death of Mr. Mak Chuen, Third Assistant, which took place in Taiping Hospital on March 7th 1926, whilst he was engaged on rice field investigation work in Perak.

FIGURES RELATING TO FIELD AND LABORATORY WORK.

Breeding places described	1,428
Larvae identified microscopically	36,630
Adults bred out and identified	245
Adults caught in houses	1,370
Adults examined for malaria parasites	622
Blood specimens examined for malaria parasites	451
Spleens examined	550

REPORTS.

The following is a list of reports issued during the year:

(i) Interim report on isvestigations in rice fields.

(ii) Malaria investigations near Kuala Selangor.

(iii) Investigation on the prevalence of flies in Port Dickson.

(iv) Breeding places of mosquitoes in the vicinity of the Residency of the Hon'ble British Resident, Negri Sembilan.

(v) Mosquitoes breeding in the Pedas-Rembau valley.

(vi) Mosquito survey made in the surroundings of Petaling Hill and Federal Hill, Kuala Lumpur.

(vii) Mosquito survey made in the surroundings of the European Hospital, Kuala Lumpur.

(viii) Comparative tests on the larvicidal and spreading powers of rubber, solar and crude oils.

(ix) Seventeen reports on specimens sent for identification.

EXHIBITIONS.

Anti-malarial exhibits relating to oiling, housing, and drainage, and living aquatic insects and fish, which destroy mosquito larvae, were shown at the Agri-Horticultural shows at Kuala Lumpur from 27-30 August, 1926, and at Teluk Datoh, on 18 September, 1926.

INVESTIGATIONS IN RICE FIELDS.

Perak—Bukit Gantang Valley.—The investigation work in rice fields in this valley, which was started during 1925, was stopped during the year, and the temporary laboratory which had been established in the hospital dispensary building, Taiping, was closed.

The mosquito survey in the above valley showed that *A. hyrcanus* was the predominant species, 88 per cent.; and was associated with *A. barbirostris* 7.2 per cent. *A. fuliginosus* 4.7 per cent. and *A. aconitus* 0.1 per cent.

Adult mosquitoes to the number of 269 were caught in houses situated close to the valley and examined for malaria parasites, but gave negative results.

Kinta District.—At the time of investigation no larvae were found, apparently owing to the fact that all the rice fields were dried up, as it was just after the harvest. A few adults, numbering 90 specimens, were caught in houses in the district. These were examined for malaria parasites, but they all gave negative results.

Negri Sembilan.—The work on rice fields is Negri Sembilan was continued and periodical mosquito surveys were carried out in selected areas, in order to determine the distribution of *Anopheles* breeding during the different seasons of the year in the district. A party consisting of one probationary assistant and two collectors is stationed at Rembau, the rice field centre of the district, in order to watch any specific changes of *Anopheles* in a particular valley, and to collect adult mosquitoes from houses in the various kampongs adjacent to the rice fields and examine these for malaria parasites.

It was found, from the mosquito surveys in rice fields at different periods of the year, that *A. fuliginosus* was always present, often in large numbers, so it would appear that this species breeds in the rice fields of Negri Sembilan throughout the year in spite of the change of conditions which takes place at the various seasons. Then again, *A. aconitus*, one of the chief associates with *A. fuliginosus* was found to be prevalent just before, and at the time of, the harvest; but decreases during fallows and entirely disappears by the time the seedlings are transplanted to the rice fields. It is interesting to note that this species begins to reappear when the rice is about four months old, and when the water in rice fields becomes clear owing to fresh supplies either from the irrigation channels, or from adjacent streams.

I have to acknowledge, with many thanks, the assistance rendered by Mr. R. W. Blair, Government Chemist, Institute for Medical Research, and his staff, in analysing the various water samples submitted to him from Rembau-Pedas valley.

Out of 912 adults of various *Anopheles* species caught in houses in this area, 451 were dissected for malaria parasites, but the results were all negative. This work is being continued.

Of 395 Malay boys from four different schools situated close to the Pedas-Rembau valley, who were examined for spleens, 54 or 13.7 per cent. showed enlarged spleens and of 178 blood slides taken from 178 boys of the above schools 20 or 11.2 per cent. showed infection with quartan parasites including one with benign tertian.

TYPE COLLECTIONS.

Type collections illustrating the commoner species of anophelines have been sent to:

1. Health Officer, Pahang.
2. Health Officer, Kinta, Ipoh.
3. Health Officer, Krian, Parit Buntar.
4. Health Officer, Port, Singapore.
5. Medical Officer, Estates, Sungei Siput.
6. Medical Officer of Health, Department of Home Affairs, Tokyo, Japan.
7. Principal Medical Officer, Hongkong.
8. Director, Government Institute of Infectious Disease, Tokyo, Japan.
9. Director Pasteur Institute, Saigon, Indo-China.
10. Director of Public Health, Burma.
11. Director, Geneeskundig Laboratorium, Weltevreden, Java.
12. Director, Harcourt Butler Institute of Public Health, Rangoon, Burma.
13. Dr. Russel, Rural Sanitation Campaign, Malacca.
14. Dr. Malcolm Miller, School of Medicine, Edinburgh.
15. Sir Ronald Ross, through Sir Malcolm Watson, Klang.

LARVICIDAL PROPERTIES OF RUBBER OIL.

Rubber oil was tested for its spreading power and toxic efficiency on mosquito larvae in comparison to other oils, such as crude and solar.

Laboratory experiments with fresh samples of oils resulted in showing that rubber was the best and solar was better than crude oil. But rubber oil lost a great deal of its efficacy by exposure of a thin layer, for periods of seventeen hours and upwards, to air.

As fresh rubber oil was found to be best, it was decided to make mixtures of rubber and crude or rubber and solar, in certain proportions, and to test them on mosquito larvae in order to see whether the rubber oil would increase the toxicity of the other oils. A series of experiments shewed that rubber oil did not increase the toxicity of the other oils with which it was tested, until an admixture of 50 per cent. was added to each of them.

The tendency of rubber oil to produce very thin inefficient films, probably renders it unsuitable for use on the margin of large ponds, or in other places where the expansion of water is not limited; but it may prove very efficient if sprayed heavily upon pools, or small accumulations of water.

INFECTION EXPERIMENT ON *A. SEPARATUS*.

Larvae of *A. separatus* were submitted twice a week through the courtesy of the District Officer, Port Dickson, and adults were bred out in the laboratory for this experiment.

Of 112 adults that were placed to feed upon malaria infectives, 34, 27 and 8 took blood from subtertian, benign and quartan, respectively; and 20, 13 and 8, respectively were dissected, but none of them showed any infection, either in stomach or salivary glands. The average time intervening between feeding and dissection was fifteen days.

VISITORS.

Among the fifteen visitors who signed their names in the book during the year appears the name of Sir Ronald Ross, K.C.M.G., of the Ross Institute for Tropical Diseases, Putney Heath, London.

H. M. PENDLEBURY,
Acting Malaria Research Officer.

31st January, 1927.

REPORT OF THE CHEMIST UPON THE WORK OF THE CHEMICAL LABORATORY, INSTITUTE FOR MEDICAL RESEARCH, FOR THE YEAR 1926.

The chemical work of the following departments is performed wholly or in part in the Chemical Laboratory: Medical, Trade and Customs, Police, Railway, Public Works and Forest Department.

The total number of samples examined in the course of the year was 7,756 as compared with 6,021 in the preceding year, an increase of 1,735. There are notable increases in the number of samples of water, toddy, chandu dross and coins. There has been a decrease in the number of samples of milk and liquors.

MEDICAL DEPARTMENT.

Chemical work is performed for the Medical Department in connexion with the Health Branch and the Hospital Branch. The samples submitted may be classified as follows:

(1) Milk;
(2) Water;
(3) Sewage effluents;
(4) Toddy;
(5) Exhibits for toxicological analyses;
(6) Miscellaneous articles.

(1) *Milk.*—The following standards are prescribed for milk in the rules of "The Sale of Food and Drugs Enactment, 1913".

(*a*) The quantity of milk fat present in milk must not be less than 3.25 per cent. of the total component parts thereof;

(*b*) The quantity of milk solids, other than milk fat, present in milk must not be less than 8.5 per cent. of the total component parts thereof.

To ascertain whether these provisions are complied with, officers of the Health Branch collect samples for examination in this laboratory.

Five hundred and ninety-seven samples of milk were examined. Of these, 15 (2.5 per cent.) contained less than 3.25 per cent. of milk fat, and 63 (10.5 per cent.) contained less than 8.5 per cent. of milk solids other than milk fat.

The reductase test—a valuable method of determining whether milk is stale or not—was carried out on 64 samples of milk collected in Kuala Lumpur. Of these, 47 completely decolorized the methylene blue in three hours. The reductase test is as follows:

> A stock solution is prepared by dissolving one part of methylene blue in 2,000 parts of water. Immediately prior to use one part of this solution is diluted with nine parts of water. One c.c. of the diluted solution is mixed with 10 c.cs. of the milk in a test-tube and then placed in a water bath kept at a temperature of 38°C. The proportion of methylene blue to milk is 1 to 200,000. The test has recently been included in the New Zealand Sale of Food and Drugs Act, and the clause is as follows: "When subjected to the reductase test, it shall not completely decolorize the methylene blue in less than three hours."

In addition, three samples of milk were examined bacteriologically.

(2) *Water.*—More interest is being taken in the provision and maintenance of pure water supplies, which is becoming one of the most important problems of the day.

Epidemic outbreaks of cholera, typhoid, dysentery, etc., are usually due to an infected water supply, and in the recent outbreak of cholera at Shanghai, suspicion fell upon the waterworks. Cholera Vibrios, the specific cause of cholera, were found to be present in the samples collected from the Intake works, the effluent from the filter beds, and from the taps from the mains. The prevention of cholera consists in municipal, domestic, and personal cleanliness and an uncontaminated water and food supply. Water plays an important part in the prevention of disease, and by providing a pure supply, the public are guarding against the possibility of water-borne diseases.

The jungle-streams of the Federated Malay States are the chief sources of supply, and are, apart from accidental contamination, generally speaking free from pollution. Every effort should be made to protect these supplies, by inspection of the catchment areas, filter beds, etc., and by bacteriological and chemical examinations of the raw and filtered waters.

Chemical examinations were carried out on 528 samples and bacteriological examinations on 99 samples of water as compared with 328 and 36, respectively during the year 1925.

The chemical examinations of the raw and filtered waters of the supplies for Kuala Lumpur numbered 259 and the averages for the year are shown in appendix B.

The averages for the years 1919 to 1926 are shown in appendices C, D, E and F, the highest results are underlined.

The raw waters are filtered through slow sand filters and the filtered waters passed into service reservoirs, the Maxwell's Hill Reservoir being open and the Weld Hill Reservoir covered. The averages differ slightly from those for the year 1925, although the rainfall for the year was lower.

The filtered waters entering the service reservoirs and the waters passing into supply after storage in these service reservoirs were examined chemically and bacteriologically daily during a period of 15 days.

The chlorination treatment of the Klang Water Supply has been continued during the year, and the raw and treated waters were examined daily during a period of 32 days. The quantity of water treated during the period under examination was 9.9 million gallons and the quantity of chlorine added 73.5 lbs. The average dose was 1 in 1.35 millions.

Arrangements were made for regular monthly examinations of the raw and filtered waters of the following supplies:

Parit Buntar, Bagan Serai, Seremban, Tanjong Malim Training College, Tapah, Taiping, Kuala Kubu, Rawang, Kajang, Teluk Anson, Gopeng, Ipoh, Batu Gajah, Kampar, Tanjong Rambutan and Kroh.

Prior to the year under review, these supplies were examined rarely or in most cases not at all.

(3) *Sewage Effluents.*—During the year, various types of sewage installations have been erected in Selangor. Samples of the resulting effluents from some of these installations have been examined. The effluents in the majority of cases have failed to conform with the standards prescribed in the Report of the Royal Commission on Sewage Disposal.

(4) *Toddy.*—Premises on which toddy is sold are open to inspection by officers of the Health Branch, who are also empowered to take samples for anaylsis.

The samples were examined to ascertain whether they complied with the standards prescribed in the rules of "The Sale of Food and Drugs Enactment, 1913", viz., (*a*) "toddy must not contain more than ten per centum of alcohol by volume or have an acidity exceeding 0.8 per centum expressed in terms of acetic acid."

The number of samples examined was 171. All the samples complied with the legal standards.

(5) *Toxicological Analyses.*—Thirteen exhibits were submitted by the Medical Department. These included viscera, foods and one medicine for suspected poison.

Human Poisoning.—Two viscera were received for examination, one of which contained a very small quantity of an alkaloid, which gave some of the reactions characteristic of nicotine, but was too small for further identification. In one case of opium poisoning, the stomach washings were found to contain opium. Two deaths occurred from gas poisoning in a well. A considerable proportion of carbon dioxide was found in the well. Specimens of blood from the two bodies were examined for carbon monoxide with negative results.

Animal Poisoning.—The viscera from five animals were examined for arsenic—arsenic being found in one case.

Miscellaneous Exhibits for Poison.—One sample of milk and one sample of chloroform were received for examination. No poison was detected in these exhibits.

(6) *Miscellaneous Articles.*—Five samples of urine were examined for sugar. Five medicines were examined, one of which was found to contain "ganja" (cannabis indica). Seven samples of mineral water were examined bacteriologically. Other samples included butter, dried milk powders, smudge sticks, citronella oil and santonin.

Mention may be made of an interesting sample of heavy red powder resembling mercuric iodide in appearance. This powder on analysis was found to consist of precipitated barium sulphate with a red dye adsorbed, and a small quantity of mercuric iodide.

The total number of articles examined was 37.

VITAMIN B EXTRACT.

The preparation of this extract from rice polishings, for the treatment of beri-beri, was continued throughout the year. During the year 8,606 fluid ounces were prepared and 8,960 fluid ounces were issued to medical practitioners, dispensaries and hospitals as compared with 6,056 fluid ounces prepared and 7,685 fluid ounces issued in 1925. One thousand five hundred and eighty-four fluid ounces were issued free, the remainder was sold at 25 cents per fluid ounce, this being the estimated cost of production.

In the year 1925, experiments with the above-mentioned extract were carried out by Dr. A. Neave Kingsbury, Pathologist, Institute for Medical Research. The results obtained indicate that the method of extraction is a highly efficient one. A new laboratory has been equipped for the preparation of this extract. With the previous apparatus, it was impossible to cope with all the demands.

As the subject of the extraction of vitamins is occupying the attention of many scientists, the methods of extraction of the vitamin B. from rice polishings are detailed below.

The present method differs very slightly from the original method as carried out by Fraser and Stanton in the year 1911.

(1).—Original Method.

Polishings in quantities of 180 grms., being the amount required by twelve fowls in three days, were mixed with 1,000 c.c. of a 0.3 per cent. hydrochloric acid solution, stirred during the day and the following morning filtered through a Buchner's filter, 100 c.c. of 0.3 per cent. hydrochloric acid solution were used to wash out the vessels. When fluid could no longer be extracted from the mass, it was mixed with 600 c.c. of 0.3 per cent. hydrochloric acid solution stirred during two hours and thereafter filtered as before.

The extracted polishings were mixed with distilled water, nearly neutralized with sodium carbonate, and the volume adjusted to 1,080 c.c., 30 c.c. of this emulsion contained five grms. of polishings less the materials dissolved out by the acidulated water.

The combined filtrates obtained from 180 grms. of polishings were nearly neutralized with sodium carbonate and concentrated at a low temperature to a volume of 1,080 c.c., 30 c.c. of his suspension contained the substances solved out by acidulated water from 5 grms. of polishings.

(2).—Present Method.

Rice polishings, preferably fresh from the mill and of the best quality, are sifted to remove portions of husk and broken rice.

The polishings are extracted with four times their weight of 20 per cent. alcohol containing 0.1 per cent. hydrochloric acid.

The extraction is conveniently carried out in upright cylindrical jars of about five litres capacity. The fluid is left in contact with the polishings for one week, the whole being well stirred daily to facilitate extraction.

Six jars are worked up daily, each containing:

Polishings	750 grms.
Ninety-five per cent. alcohol	600 c.cs.
Water	2,400 ,,
Pure hydrochloric acid	3 ,,

The fluid is filtered off through Whatman No. 3 filter paper by means of large Buchner funnels and water suction pumps. The residue is pressed to secure a maximum yield of filtrate.

The filtrate obtained from each jar is about 2,500 c.cs., and the total filtrate from six jars (i.e., from 4,500 grammes of polishings) about 15,000 c.cs.

The filtrate is concentrated under reduced pressure (about 40 mm. of mercury) to about 1,850 c.cs. and made up to 2,025 c.cs. with distilled water, and 225 c.cs. of distilled alcohol are added.

The product obtained from each concentration is allowed to stand two or three days without shaking to enable the precipitate, which is formed on the addition of alcohol to settle. The supernatant liquid is then poured through a Whatman No. 2 folded filter paper and when the liquid has filtered the precipitate is poured on the filter. The precipitate on the paper is washed once or twice with very small quantities of water the washings being added to the main filtrate, and water added to make up to 2,250 c.cs.

One c.c. of this extract represents two grammes of the original polishings. It contains about 9.5 per cent. of alcohol as a preservative.

TRADE AND CUSTOMS DEPARTMENT.

The work for this department consists mainly in the examination of samples in connexion with the assessment of duty, e.g., wines, potable spirits, liquors and denatured spirits, and samples of chandu and chandu dross, submitted by the Chandu Monopoly Department in connexion with the administration of the Chandu Enactment.

Liquors.

In connexion with the assessment of duty, 91 samples of alcoholic liquors were tested for their spirit strength. In addition, five samples were examined for denaturants, four of which were found to contain the necessary ingredients.

Toddy.

The acidity and alcoholic strength were determined in 171 samples. In eight samples, the acidity exceeded 0.8 per cent. expressed as acetic acid.

It is probable that most of the toddy offered for sale is diluted with water, but no satisfactory method for the detection of this adulteration is at present known. Investigations with this end in view were commenced during the year, and will be continued during 1927.

Chandu.

Under the provisions of the Chandu Enactment, the importation of chandu of other than Government manufacture is prohibited. The Enactment, further, makes it an offence to be in possession of:

(*a*) any chandu reprepared from dross,

(*b*) more than seven and a half tahils of Government chandu.

N.B.—One tahil equals approximately 37.8 grammes.

Two hundred and four samples of chandu and substances suspected to contain chandu were received. Of these, 71 were found to be Government chandu, 118 illicit chandu, four chandu prepared from chandu dross and three imitation chandu containing no opium.

Chandu Dross.

The Chandu Monopoly Department purchases chandu dross from licensees at prices varying with the quality of the dross. The chandu dross is collected by the Chandu Monopoly Department and inspections of the dross are carried out by a Chemist from this laboratory.

The number of samples inspected during the year was 4,419. The samples examined were graded as follows:

Grade I	4,282
,, II	94
,, III	43

Deleterious Drugs.

Under the provisions of the "The Deleterious Drugs Enactment, 1911", it is an offence to import, sell or use without licence certain drugs (morphine, cocaine, eucaine, etc.) or preparations containing more than a certain percentage of these drugs. In suspected cases, the officers of the Customs Department take samples, which are forwarded to this laboratory for analyses. Two samples were submitted during the year, no deleterious drug was found to be present in the samples.

Miscellaneous Samples.

In connexion with the administration of the Customs and Excise Enactments, twenty-nine samples were received. These included samples of turpentine, Rangoon oil and substances suspected to contain "ganja."

POLICE DEPARTMENT.

One thousand two hundred and fifty-nine exhibits were received from the Police Authorities in connexion with proposed proceedings in the Courts. These may be classified as follows:

(1) Coins and coining materials;
(2) Articles for blood stains;
(3) Toxicological analyses;
(4) Deleterious Drugs;
(5) Miscellaneous.

(1) *Coins and Coining Materials.*—The number of exhibits examined was 1,077. Of these 1,043 were counterfeit coins, and two moulds. The other exhibits consisted of pieces of metal and chemicals used in the manufacture of counterfeit coins.

(2) *Articles for Blood Stains.*—Exhibits, in connexion with charges of murder, were received from the Police Authorities for examination for bloodstains. The number of exhibits received was 96, of which 57 gave positive results. The exhibits, which gave positive reactions for blood were further examined by the precipitin test for human serum, 46 of these gave the reaction characteristic of human serum.

The results of the examinations are tabulated below:

Exhibits.	Number examined.	Number blood-stained	Number human-blood.
Knives, parangs, etc.	49	23	19
Articles of clothing	37	27	26
Woods, mats, etc.	9	5	1
Earth	2	2	2

(3) *Toxicological Analyses.*—Forty exhibits were received for examination. Of these 21 were of human viscera, in 12 of which poison was identified. Morphine was found in 4 cases, arsenic 3, cyanide 2, alcohol 1, oxalic acid 1, santonin 1, and sodium hydroxide in 1.

In the last case, the stomach and contents gave a markedly alkaline reaction. The mucous membrane of the stomach was blackened, hardened and corrugated. Other exhibits received in connexion with human poisoning included samples of urine, vomited matter, foodstuffs, and liquids.

The poisons identified in exhibits other than viscera were opium in five exhibits, arsenic four, datura two, cyanide two, yellow phosphorus one and mercuric chloride in one.

One case of arsenical poisoning deserves mention, where fifty or more coolies suddenly became ill after drinking toddy, without fatal results. Two samples of the toddy received for examination contained a mixture of toddy, sulphur and arsenic. In one sample (770 cubic centimetres) the quantity of arsenic found was equivalent to 6.4 grams. of arsenious oxide and in the other sample (740 cubic centimetres) the quantity of arsenic found was equivalent to 4.2 grams. of arsenious oxide. The arsenic and sulphur (a mixture used for white ants) had been mixed with the toddy either accidentally or purposely. The complete history of these cases has not yet been obtained.

Case of Datura Poisoning.—The alkaloids of datura stramonium were found in a curry and in two vomits of different individuals who had partaken of this curry.

Case of Mercuric Chloride Poisoning.—A sample of samsu (130 cubic centimetres) was found to contain 2.8 grams. of mercuric chloride. As 0.2 gram. of this substance may be a fatal dose, it follows that less than half an ounce of the samsu contained a fatal dose. Two coolies who tasted the samsu were violently ill. Both subsequently developed symptoms of mercury poisoning but recovered under treatment in hospital.

(4) *Deleterious Drugs.*—Two substances suspected to contain one of the deleterious drugs specified in "The Deleterious Drugs Enactment 1925", were examined with negative results.

(5) *Miscellaneous.*—There were 35 exhibits submitted. Of these, 11 were found to be "ganja." The other exhibits included some notebooks for finger prints, materials is connexion with explosions and pieces of alleged gold bullion, which were found to contain a core of silver. A liquid. which had been thrown at a person with intent to injure was found on examination to contain caustic soda.

OTHER DEPARTMENTS.

Samples submitted by the Federated Malay States Railway Department included 28 samples of white metal, and two samples of axle oil. Samples of water were also examined as to their suitability for use in boilers and for domestic purposes.

For the Public Works Department samples of water for domestic purposes were analysed.

For the Forest Department samples of the following resins were examined: Damar Penak, Damar Batu, Damar Mata Kuching and dragons blood. A sample of Damar Resak from a species of vatica was found to contain an oil similar to that of Gurjun Balsam

Samples of Minyak Keruing were examined to ascertain whether the oleo-resin of this species of dipterocarpus would be of commercial value.

Two patent specifications is connexion with "The Inventions Enactment, 1914" were examined for the Federal Secretariat.

PRIVATE ANALYSES.

Forty-nine samples were received for examination. Included in this total were samples of water, explosives and kerosine.

The fees for these analyses amounted to $2,280/-.

LEGAL PROCEEDINGS.

Members of the staff of the Chemical Laboratory gave evidence in legal proceedings on 31 occasions.

STAFF.

The staff of the Chemical Laboratory consists of:

Chemist;

Three Assistant Chemists.

In addition there are five laboratory assistants, two attendants for gas plant and one laboratory attendant.

INSTITUTE FOR MEDICAL RESEARCH,
FEDERATED MALAY STATES,
KUALA LUMPUR,
10th February, 1927.

R. W. BLAIR,
Chemist-in-Charge, Government Laboratories,
Federated Malay States.

Appendix A.

TOTAL NUMBER OF SAMPLES EXAMINED IN THE CHEMICAL LABORATORY DURING THE YEARS 1925 AND 1926.

	Number of analyses, 1925.	Number of analyses, 1926.
Medical Department.—		
Milk, chemical	741	597
Milk, bacteriological	12	3
Water, chemical	328	528
Water, bacteriological	36	99
Sewage, effluents	26	10
Toddy	262	171
Toxicological analyses	24	13
Miscellaneous	27	37
Trade and Customs Department.—		
Liquors	138	96
Toddy	28	171
Chandu	400	204
Chandu dross	3,180	4,419
Deleterious drugs	24	2
Miscellaneous	28	29
Police Department.—		
Coins and coining materials	495	1,077
Articles for blood stains	107	96
Toxicological analyses	30	49
Liquors	5	—
Deleterious drugs	2	2
Miscellaneous	12	35
Other Departments.—		
Miscellaneous	37	69
Private Analyses.—		
Water	34	40
Milk	12	1
Spirits	18	—
Toxicological analyses	1	—
Miscellaneous	14	8
Total	6,021	7,756

KUALA LUMPUR WATER SUPPLY.

Chemical Averages for each month of the year 1926. Parts per 100,000 unless otherwise stated.

Month.	Impounding Reservoir. (Raw Water.)									Intake Works, Ampang. (Raw Water.)								
	Colour M. M. Brown.	pH	Ammoniacal nitrogen.	Albuminoid nitrogen.	Oxygen absorbed in 3 hrs.	Chlorine.	Total solids.	Oxidized nitrogen.	Rainfall in inches.	Colour M. M. Brown.	pH	Ammoniacal nitrogen.	Albuminoid nitrogen.	Oxygen absorbed in 3 hrs.	Chlorine.	Total solids.	Oxidized nitrogen.	Rainfall in inches.
January	18	7.5	.0003	.0103	.1135	.07	4.0	.004	6.24	17	7.0	.0000	.0040	.0956	.07	3.5	.006	7.41
February	21	7.0	.0003	.0100	.1279	.07	4.75	.002	7.11	26	6.5	.0006	.0102	.2528	.06	3.75	.004	7.82
March	21	6.0	.0001	.0085	.1296	.07	4.0	.004	3.12	25	7.0	.0000	.0051	.1444	.06	3.25	.003	3.34
April	25	6.0	.0009	.0098	.1476	.06	3.75	.003	14.15	32	6.5	.0005	.0080	.1993	.06	4.75	.006	9.48
May	29	6.0	.0006	.0122	.1687	.06	3.5	.003	10.62	28	6.5	.0005	.0073	.1578	.06	3.75	.003	12.97
June	34	7.0	.0006	.0108	.1680	.06	3.5	.002	7.83	40	7.0	.0001	.0090	.2349	.06	3.5	.002	7.85
July	28	7.0	.0003	.0099	.1600	.06	4.5	.002	4.0	26	7.0	.0001	.0069	.1548	.06	4.0	.004	4.21
August	29	6.5	.0000	.0088	.1467	.06	3.75	.002	4.81	26	6.5	.0006	.0053	.1517	.06	4.75	.003	5.93
September	37	6.0	.0005	.0094	.1600	.07	3.75	.004	6.58	38	6.0	.0008	.0062	.1906	.06	3.5	.004	10.00
October	33	6.0	.0000	.0108	.1650	.06	4.25	.001	11.38	34	6.0	.0001	.0071	.2072	.07	4.5	.014	12.49
November	39	6.5	.0004	.0126	.1746	.07	4.0	.002	16.41	34	6.5	.0000	.0064	.1484	.07	3.75	.008	14.58
December	39	7.0	.0012	.0144	.1634	.07	1.75	.001	18.32	35	6.5	.0002	.0092	.1795	.08	3.0	.002	22.42
Averages ...	29	6.5	.0004	.0106	.1521	.07	3.79	.003	9.21	30	6.5	.0003	.0071	.1764	.06	3.83	.005	9.88

Month.	Maxwell's Hill Reservoir. (Filtered Water.)								Weld Hill Reservoir. (Filtered Water.)							
	Colour M. M. Brown.	pH	Ammoniacal nitrogen.	Albuminoid nitrogen.	Oxygen absorbed in 3 hrs.	Chlorine.	Total solids.	Oxidized nitrogen.	Colour M. M. Brown.	pH	Ammoniacal nitrogen.	Albuminoid nitrogen.	Oxygen absorbed in 3 hrs.	Chlorine.	Total solids.	Oxidized nitrogen.
January	10	6.0	.0000	.0032	.0463	.07	3.5	.007	14	8.0	.0000	.0036	.0731	.07	3.75	.006
February	15	6.0	.0002	.0059	.0627	.07	4.0	.000	15	8.0	.0000	.0037	.0654	.06	3.75	.004
March	15	6.0	.0000	.0034	.0507	.06	3.0	.004	21	8.0	.0000	.0044	.0947	.05	3.5	.004
April	14	5.5	.0000	.0035	.0482	.06	2.5	.005	23	8.0	.0000	.0052	.1270	.06	4.75	.006
May	17	6.0	.0000	.0053	.0939	.06	4.0	.006	24	7.0	.0000	.0056	.1407	.06	5.0	.004
June	14	5.5	.0000	.0056	.0861	.06	3.0	.006	21	8.0	.0000	.0065	.1151	.06	3.5	.006
July	14	6.0	.0000	.0054	.0946	.06	3.75	.005	22	8.0	.0001	.0047	.1148	.06	3.5	.005
August	15	6.0	.0000	.0031	.0728	.07	3.5	.003	20	7.0	.0000	.0032	.0921	.06	4.25	.003
September	18	6.0	.0000	.0030	.0850	.07	3.0	.009	28	7.0	.0000	.0036	.1229	.06	3.25	.006
October	20	6.0	.0001	.0037	.1004	.07	3.25	.002	27	6.5	.0000	.0040	.1288	.07	4.5	.004
November	18	6.5	.0000	.0039	.0966	.07	3.0	.006	25	7.0	.0002	.0048	.1242	.06	5.5	.002
December	18	6.5	.0000	.0036	.0842	.07	1.25	.004	26	7.0	.0000	.0039	.1060	.07	2.25	.007
Averages ...	16	6.0	.0000	.0041	.0768	.07	3.15	.005	22	7.5	.0000	.0044	.1087	.06	3.96	.005

Appendix C.

AVERAGES YEARS (1921–1926.)

Kuala Lumpur Water Supply: Impounding Reservoir at Ampang (Raw Water) (High Level Supply).

Parts per 100,000 (unless otherwise stated).

Years 1921–1926.	Ammoniacal nitrogen.	Albuminoid nitrogen.	Oxidized nitrogen.	Chlorides as chlorine.	Oxygen absorbed from permanganate 3 hours at 80° F.	Colour M.M. Brown in a 2 feet tube.	Total solids.	Rainfall in inches per mensem.	Reaction pH
1921	.0006	.0124	.002	.06	.1619	...	4.0		
1922	*.0009*	*.0131*	.003	.07	.1641	...	4.4	8.07	
1923	.0007	.0116	*.004*	.07	*.1736*	22	4.0	8.41	
1924	.0006	.0111	.002	.07	.1516	21	4.3	7.61	
1925	.0005	.0102	*.004*	.07	.1484	26	*4.5*	*11.53*	7.5
1926	.0004	.0106	.003	.07	.1521	*29*	3.8	9.21	6.5
Averages for 6 years	.0006	.0115	.003	.07	.1586	25	4.2	8.97	7.0

Appendix D.

AVERAGES YEARS (1919–1926.)

Kuala Lumpur Water Supply: Maxwell's Hill (Filtered Water) (High Level Supply).

Parts per 100,000 (unless otherwise stated.)

Years 1919–1926.	Ammoniacal nitrogen.	Albuminoid nitrogen.	Oxidized nitrogen.	Chlorides as chlorine.	Oxygen absorbed from permanganate 3 hours at 80° F.	Colour M.M. Brown in a 2 feet tube.	Total solids.	Reaction pH
1919	*.0010*	*.0094*	.010	*.08*	.0741			
1920	.0005	.0074	.010	.06	.0834	...	*5.5*	
1921	.0001	.0047	*.011*	.06	.0828	...	3.1	
1922	.0001	.0047	.007	.07	.0835	...	3.4	
1923	.0002	.0043	.006	.07	*.1049*	18	3.5	
1924	.0008	.0055	.004	.06	.0897	17	3.6	
1925	.0001	.0056	.005	.07	.0850	*19*	4.0	7.0
1926	.0000	.0041	.005	.07	.0768	16	3.2	6.0
Averages for 8 years ...	.0004	.0057	.007	.07	.0850	18	3.7	6.5

Appendix E.

AVERAGES YEARS (1921–1926).

Kuala Lumpur Water Supply: Ampang Intake Works (Raw Water) (Low Level Supply).

Parts per 100,000 (unless otherwise stated).

Years 1921–1926.	Ammoniacal nitrogen.	Albuminoid nitrogen.	Oxidized nitrogen.	Chlorides as chlorine.	Oxygen absorbed from permanganate 3hours at 80°F.	Colour M.M. Brown in a 2 feet tube.	Total solids.	Rainfall in inches per mensem.	Reaction pH
1921	.0005	.0055	.003	.06	.1555	...	*5.1*		
1922	.0006	.0067	.004	.06	.1762	...	3.8	9.22	
1923	*.0008*	*.0071*	005	.06	*.1859*	24	4.0	8.74	
1924	*.0008*	.0051	.005	.05	.1562	24	4.3	8.28	
1925	.0005	.0066	*.006*	.06	.1709	27	4.2	*12.07*	7.5
1926	.0003	*.0071*	.005	.06	.1764	*30*	3.8	9.88	6.5
Averages for 6 years	.0006	.0064	.005	.06	.1702	26	4.2	9.64	7.0

Appendix F.

AVERAGES YEARS (1919–1926).

Kuala Lumpur Water Supply: Weld Hill (Filtered Water) (Low Level Supply).

Parts per 100,000 (unless otherwise stated).

Years 1919–1926.	Ammoniacal nitrogen.	Albuminoid nitrogen.	Oxidized nitrogen.	Chlorides as chlorine.	Oxygen absorbed from permanganate 3 hours at 80°F.	Colour M.M. Brown in a 2 feet tube.	Total solids.	Reaction pH
1919	*.0010*	*.0078*	*.010*	*.08*	.1113			
1920	.0005	.0064	.009	.07	.1267	...	*6.0*	
1921	.0002	.0044	.007	.06	.1206	...	4.4	
1922	.0001	.0048	.005	.06	.1329	...	3.5	
1923	.0002	.0046	.007	.06	*.1465*	22	3.6	
1924	.0003	.0033	.006	.05	.1155	21	3.8	
1925	.0001	.0044	.006	.06	.1054	*23*	4.0	8.0
1926	.0000	.0044	.005	.06	.1087	22	3.9	7.5
Averages for 8 years ...	.0003	.0050	.007	.06	.1210	22	4.2	7.5

REPORT OF THE SENIOR HEALTH OFFICER, FEDERATED MALAY STATES, FOR THE YEAR 1926.

HEALTH STAFF.

1. The sanctioned staff for the year was:

EUROPEAN OFFICERS.

Senior Health Officer	1
Health Officers	15
Chief Sanitary Inspectors	3

ASIATIC OFFICERS.

Assistant Health Officers	4
Sanitary Inspectors	28

2. Of the above, six Health Officers and six Medical Officers, seconded to the Health Branch, and two Chief Sanitary Inspectors were available, one of the latter on his return from leave on 26th February, 1926, being posted to Tapah to supervise the anti-malarial works in connection with the road to Cameron's Plateau (4,750 ft.), which will be a hill station in the future.

3. Eight of the Sanitary Inspectors were absent in Singapore for six months, undergoing a course preparatory to taking the examination for the Royal Sanitary Institute certificate, which certificate must be held before an Inspector can be promoted to the higher grades. Their services were not available to the branch from May until November.

4. The following table shows the principal changes among the senior staff:

Date.	Name of officer.	Designation.	From which district.	To which district.	Remarks.
1-2	C. S. Ryles, O.B.E.	Health Officer	Selangor East	Negri Sembilan	
21-3	E. R. C. Cooke, M.C.	Medical Officer	Railways ...	—	On long leave
10-4	A. R. Wellington	Senior Health Officer	—	To act as Principal Medical Officer F.M.S.	
10-4	A. K. Cosgrave, M.C.	Senior Medical Officer, Selangor	—	To act as Senior Health Officer F.M.S.	
23-4	W. O. Pou ...	Health Officer	—	Lower Perak and Batang Padang	Returned from leave
23-4	P. G. Temple ...	,,	Lower Perak	—	On long leave
1-5	W. J. Vickers ...	,,	—	Selangor East	Transferred from the Medical Branch
15-5	F. V. Jacques ...	Medical Officer	—	Perak North	Returned from leave
17-5	J. G. Castellain	Health Officer	—	Railways ...	On month to month engagement
18-5	A. Reid ...	,,	Perak North	—	Reverted to Medical Branch
19-5	D. W. G. Faris	Medical Officer	—	Port Swettenham	Transferred from Medical Branch
13-8	C. C. Taffs ...	,,	—	Negri Sembilan	Recruit
18-12	R. B. Jackson ...	,,	—	Pahang ...	Returned from leave
23-12	V. D. Wyborn...	,,	Pahang ...	—	Reverted to Medical Branch

DUTIES OF THE HEALTH BRANCH.

5. The duties of the members of the Health Branch include:

(i) Vital statistics and work under the Registration of Births and Deaths Enactment.

(ii) Malaria investigation and mosquito control.

(iii) Work under the following Enactments:

(*a*) Quarantine and Prevention of Disease Enactment:
(*b*) Sanitary Boards Enactment;
(*c*) Sale of Food and Drugs Enactment;
(*d*) Labour Code;

(iv) General, including inspection of schools, Government lines, water works, etc.

(v) Maternity and Infant Welfare.

REVENUE AND EXPENDITURE.

6. The only revenue collected was that for certificates issued under the Registration of Births and Deaths Registration Enactment and for the sale of mosquito identification books. The total amount collected was $2,887.25.

7. The expenditure debited against the Health Branch was:

Personal Emoluments	$189,164.87	
Temporary Allowances	32,079.27	
Other Charges, Annually Recurrent	94,453.11	
Other Charges, Special Expenditure	6,555.22	
	$322,252.47	
Clerical Service	41,436.60	
Total ..		$363,689.07

GENERAL REVIEW OF WORK DONE.

8. The Health Branch not yet being up to strength was not able to carry out in full, all the duties pertaining to the branch.

9. The Senior Health Officer in addition to his own duties carried out those of the Health Officer, Railways, from 21st March, 1926, to 17th May, 1926.

10. Under the Quarantine and Prevention of Disease Enactment work was shared with the Medical Branch. There were no large epidemics though a small outbreak of cholera in the Kuala Langat district in March, caused considerable anxiety.

11. Work under the Labour Code was satisfactory in view of the number of the staff. Of 1,450 estates, 725 were visited by Health Officers and of 156 Estate Hospitals 154 were visited.

12. School inspection was shared with the Medical Department, 213 visits were made by the Health Staff.

13. A very marked increase of immigrants, 99,066 for 1926, compared with 48,748 for 1925, taxed the accommodation at Port Swettenham Quarantine Camp somewhat severely, in view of the fact that several successive steamers arrived infected with cholera, the situation was satisfactorily dealt with by the Quarantine Camp Staff.

14. Towards the end of December the rain-fall over parts of the peninsula was unprecedented and on the night of the 27th very severe floods at Kuala Lipis resulted in the Health Office being swept away, all records and papers were totally lost, a very serious matter since the Health Officer is the Registrar of Births and Deaths for Pahang.

In this report therefore it is impossible to give any figures for Pahang for the year under review.

HEALTH LEGISLATION.

15. The following laws affecting the public health were passed during the year:

(*a*) Enactment 10 of 1926. An Enactment to amend the Quarantine and Prevention of Disease Enactments of 1903.

(*b*) Enactment 13 of 1926. An Enactment to provide for the establishment of Health Boards and to prescribe the powers and duties thereof. In force from January 1st, 1927.

(*c*) Enactment 23 of 1926. An Enactment to declare the law relating to lepers.

VITAL STATISTICS.

16. Populations are estimated from the Census figures which are believed to be correct. Immigration and emigration have a greater influence on population than have births and deaths. Accurate information concerning immigration and emigration especially by rail are not available and tables cannot be given.

17. Increase in population is calculated on the arithmetical increase basis as experience has shown this to be more reliable than that based on geometrical grounds.

18. Births and deaths figures are obtained from notifications compulsory under the Registration of Births and Deaths Enactment which is everywhere in force. The total number of births and deaths is approximately correct. The accuracy of diagnoses as to causes of deaths is in the majority of cases open to question, for few of the cases were seen by a qualified medical man previous to decease. In each of the four large towns every undercertified body is viewed by the Assistant Health Officer who interrogates the friends and forms a diagnosis. In rural districts these duties are carried out by the Police.

19. Deaths in towns are debited against the town only if the deceased was resident there for three months or more previous to death. The towns contain hospitals which cater both for the town and the district surrounding it. It is a well-known fact that chronic cases from the rural areas drift to the towns in the hope of getting more skilled treatment. Taking all things into consideration even with a qualifying period of three months, a number of deaths are debited against the towns which should be debited against the rural areas where the disease was contracted.

20. The general death-rate for three States (Pahang excluded) was 29.22 per mille as against 23.60 for the whole Federated Malay States for 1925, this increase is probably due to the wave of malaria which occurred in the first half of the year, the absence of the Pahang figures and the increased immigration which is not reckoned in the population.

21. The number of deaths attributable to fevers (most of them probably of malarial origin) was 16,531 or 43 per cent. of the total. Last year the percentage was 42.09.

22. Dysentery and diarrhoea accounted for 7.14 per cent. of the total deaths, pulmonary tuberculosis for 4.87 per cent., pneumonia for 6.69 per cent., and convulsion for 11.18 per cent.

23. Because of the peculiar age and sex distribution and the fact that the labour of this country is largely males aged 20-45 who passed the doctor before embarking for Malaya, the death figures cannot be compared with countries where the labour is indigenous and where age and sex distribution are normal. With normal age and sex distribution the death-rate would probably be twice what it is.

24. There is however no getting away from the fact that the death-rates since 1911, when the Health Branch was first formed have shown a steady decline, with the exception of the year under review.

25. The following figures are put for comparison:

	Federal.		Kuala Lumpur Town.		Estates.	
Year.	General death rate.	Fevers death rate.	General death rate.	Fevers death rate.	General death rate.	Fevers. death rate.
1911	39.11	17.47	39.02	9.87	62.90	Not known
1926	29.22	12.57	21.01	3.74	14.51	5.39

26. The figures for estates must be accepted with caution for few Asiatic-owned estates ever admit either the existence of sickness or the occurrence of a death on the estate and nil returns are sent to the Health Officer.

VITAL STATISTICS (FEDERAL).

Population.

27. The population of the Federated Malay States as estimated was at the end of June, 1926, 1,476,032, distributed as follows:

Perak	654,179
Selangor	457,170
Negri Sembilan	204,257
Pahang	160,426

28. Assuming that the races remain in the same proportion as in the Census year the race distribution is as follows:

State.	Europeans and Americans.	Eurasians.	Malays and other natives of the Archipelago.	Chinese.	Indians.	Others.
Perak	2,389	1,040	260,177	228,461	160,136	1,976
Selangor	3,054	1,775	105,875	181,071	163,246	2,149
Negri Sembilan... ...	1,152	548	81,797	77,943	41,748	1,069
Pahang	352	132	110,211	39,258	9,785	688
Total ...	6,947	3,495	558,060	526,733	374,915	5,882

Births.

29. Thirty-nine thousand eight hundred and thirty-four births were registered during the year, giving a birth-rate of 30.28 (excluding Pahang) per mille of population. In 1925 the number was 41,818 and the rate was 28.89.

The following table shows the number of births and birth-rates according to races:

Race.	No. of births.	Birth-rate.
Europeans and Americans	131 ...	19.86
Eurasians	127 ...	37.76
Malays and other races of the Archipelago ...	17,522 ...	39.12
Chinese	12,973 ...	26.61
Indians	9,010 ...	24.68
Others	71 ...	13.67

Deaths.

30. Thirty-eight thousand four hundred and forty-five deaths were registered, giving a death-rate of 29.22 (excluding Pahang) per mille. The number of deaths in 1925 was 34,153 and the rate was 23.60 for the whole Federated Malay States.

The distribution of deaths among the several races was as follows:

Race.	No. of deaths.	Death-rate.
Europeans and Americans	36 ...	5.46
Eurasians	46 ...	13.68
Malays and other races of the Archipelago ...	11,657 ...	26.03
Chinese	14,730 ...	30.22
Indians	11,920 ...	32.64
Others	56 ...	10.78

31. The deaths and death-rates for the total population for the last ten years were as follows:

Year.	Population.	Deaths.	Rate per mille.
1917	1,244,018 ...	42,514 ...	34.17
*1918	1,279,859 ...	67,639 ...	52.85
1919	1,315,700 ...	38,645 ...	29.37
1920	1,351,541 ...	43,705 ...	32.34
1921	1,304,825 ...	38,077 ...	29.18
1922	1,360,876 ...	35,028 ...	25.74
1923	1,389,667 ...	33,914 ...	24.40
1924	1,418,455 ...	33,585 ...	23.68
1925	1,447,243 ...	34,153 ...	23.60
1926	1,315,606† ...	38,445† ...	29.22†

* High figure due to influenza epidemic.

† Excluding Pahang.

32. Table showing causes of deaths in 1926:

Diseases.	No. of deaths.	Rate per mille.
Malaria	16,531 ...	12.57
Dysentery and diarrhoea	2,744 ...	2.09
Pneumonia	2,573 ...	1.96
Pulmonary tuberculosis	1,873 ...	1.42
Ankylostomiasis	223 ...	0.17
Beri-beri	314 ...	0.24
Syphilis	84 ...	0.06
Enteric	28 ...	0.02
Tetanus	65 ...	0.05
Convulsions	4,297 ...	3.27
Bright's disease	195 ...	0.15
Ptomaine poisoning	126 ...	0.10
Influenza	98 ...	0.07
Other diseases	9,294 ...	7.06

33. The following table shows the deaths and death-rates from the principal diseases for the last ten years:

Year.	Malaria.		Dysentery and diarrhoea.		Pulmonary tuberculosis.		Beri-beri.	
	Deaths.	Rate.	Deaths.	Rate.	Deaths.	Rate.	Deaths.	Rate.
1917 ...	18,750	15.07	4,942	3.97	2,446	1.96	1,207	0.97
* 1918 ...	31,515	24.62	4,280	3.34	3,184	2.48	1,277	0.98
1919 ...	16,975	12.90	3,712	2.82	2,445	1.86	930	0.71
1920 ...	20,595	15.24	3,804	2.81	2,634	1.95	431	0.32
1921 ...	17,168	13.16	2,999	2.30	2,255	1.73	422	0.32
1922 ...	15,570	11.44	2,419	1.78	2,393	1.76	443	0.33
1923 ...	15,516	11.17	2,142	1.55	1,934	1.39	378	0.27
1924 ...	14,283	10.07	1,961	1.38	1,916	1.35	453	0.32
1925 ...	14,377	9.93	1,945	1.34	2,001	1.38	424	0.29
† 1926 ...	16,531	12.57	2,744	2.09	1,873	1.42	314	0.24

* Influenza epidemic year. † Excluding Pahang.

34.—

VITAL STATISTICS (*State figures for comparison*).

Birth Table.

State.	No. of birth.	Birth-rate per 1,000 living.	1925 birth-rate.
Perak	20,095 ...	30.72 ...	27.76
Selangor	13,914 ...	30.44 ...	29.69
Negri Sembilan ...	5,825 ...	28.51 ...	27.69
Pahang	... No figures	... No figures ...	32.80

35. Birth statistics of different nationalities.

State.	Europeans and Americans.		Eurasians.		Malays and other races of the Archipelago.		Chinese.		Indians.		Others.	
	Births.	Birth-rate.	Births.	Birth-rate.	Births.	Birth-rate.	Births.	Birth-rate.	Births.	Birth-rate.	Births.	Birth-rate.
Perak	46	19.25	32	30.77	10,175	39.11	6,118	26.78	3,676	22.96	48	24.30
Selangor	78	25.54	64	36.06	4,004	37.82	5,332	29.45	4,418	27.06	18	8.38
Negri Sembilan	7	6.08	31	56.57	3,343	40.87	1,523	19.54	916	21.94	5	4.68
Pahang *												

* No figures.

36.—

DEATH TABLE (*State figures for comparison*).

State.	No. of deaths.	Death-rate 1926.	Death-rate 1925.
Perak	18,506 ...	28.29 ...	23.86
Selangor	13,390 ...	29.29 ...	22.75
Negri Sembilan ...	6,549 ...	32.06 ...	23.51
Pahang (No figures).			

37. Deaths and death-rate of different nationalities.

State.	Europeans and Americans.		Eurasians.		Malays and other races of the Archipelago.		Chinese.		Indians.		Others.	
	Deaths.	Death-rate.	Deaths.	Death-rate.	Deaths.	Death-rate.	Deaths.	Death-rate.	Deaths.	Death-rate.	Deaths.	Death-rate.
Perak	16	6.69	8	7.69	6,433	24.73	7,287	31.90	4,727	29.52	35	17.71
Selangor	16	5.24	22	12.39	2,667	26.13	5,239	28.93	5,431	33.27	15	6.98
Negri Sembilan	4	3.47	16	29.20	2,557	31.26	2,204	28.28	1,762	42.20	6	5.61
Pahang *												

* No figures.

38. Table showing deaths and death-rates from principal diseases.

State.	Malaria.			Dysentery and diarrhoea.			Pulmonary tuberculosis.			Beri-beri.		
	Deaths.	Rate.		Deaths.	Rate.		Deaths.	Rate.		Deaths.	Rate.	
		1926.	1925.		1926.	1925.		1926.	1925.		1926.	1925.
Perak	8,732	13.35	11.11	1,027	1.57	1.16	996	1.52	1.49	108	0.17	0.13
Selangor	5,011	10.96	8.07	1,211	2.65	1.65	521	1.14	1.20	140	0.31	0.34
Negri Sembilan ...	2,788	13.65	8.74	506	2.48	1.25	356	1.74	1.65	66	0.32	0.39
Pahang *												

* No figures.

INFANTILE MORTALITY.

39. There were 7,718 deaths of children under one year of age. The infantile mortality rate or rate per 1,000 births was 193.75; the rate for 1925 was 177.17.

Infantile Mortality Table.

State.	Deaths of children under one year of age.	Death-rate per 1,000 births.
Perak	3,459 ...	172.13
Selangor	2,888 ...	207.56
Negri Sembilan	1,371 ...	235.36
Pahang (No figures).		

40. Deaths from Zymotic Diseases.

State.	Plague.	Cholera.	Smallpox.	Cerebro-spinal meningitis.
Perak	—	—	—	5
Selangor	—	6	—	8
Negri Sembilan	—	—	—	2
Pahang	—	—	—	—

41. Death-rates from principal diseases for the last seven years:

Year.	Perak.			Selangor.			Negri Sembilan.			Pahang.		
	Malaria.	Dysentery and diarrhoea.	Pulmonary tuberculosis.	Malaria.	Dysentery and diarrhoea.	Pulmonary tuberculosis.	Malaria.	Dysentery and diarrhoea.	Pulmonary tuberculosis.	Malaria.	Dysentery and diarrhoea.	Pulmonary tuberculosis.
1920	15.82	2.21	2.11	13.13	3.77	1.89	18.18	4.31	2.37	15.24	1.19	0.94
1921	13.32	1.54	1.78	11.80	3.29	1.85	13.07	3.42	1.68	16.61	1.19	1.18
1922	12.29	1.42	1.83	9.96	2.39	2.00	11.51	2.40	1.69	12.10	0.74	0.84
1923	12.46	1.26	1.52	9.48	1.93	1.48	10.53	1.45	1.41	11.36	1.73	0.58
1924	10.66	1.20	1.50	7.40	1.67	1.36	10.50	1.32	1.52	14.59	1.41	0.50
1925	11.11	1.16	1.49	8.07	1.65	1.20	8.74	1.25	1.65	11.91	1.35	1.13
1926	13.35	1.57	1.52	10.96	2.65	1.14	13.65	2.48	1.74	*		

* No figures.

42. Vital statistics for the four large towns, Kuala Lumpur, Ipoh, Taiping and Seremban.

Town.	Estimated population.	Births.		Deaths of persons who previous to decease had resided in town three months.	
		Number.	Rate per mille.	Number.	Rate per mille.
Kuala Lumpur	98,125	3,645	37.15	2,062	21.01
Ipoh	43,662	1,364	31.24	580	13.28
Taiping	21,936	1,107	50.46	758	34.55
Seremban	21,838	664	30.40	533	24.41

43. Table showing corrected death-rates in the four principal towns during the last seven years.

Year.	Kuala Lumpur.		Ipoh.		Seremban.		Taiping.	
	Population.	Death-rate.	Population.	Death-rate.	Population.	Death-rate.	Population.	Death-rate.
1920 ...	67,930	30.00	34,357	22.64	15,006	34.05	25,434	39.90
1921 ...	81,197	27.02	37,194	20.38	17,479	36.16	21,178	50.05
1922 ...	84,476	21.36	38,895	21.78	13,398	27.93	21,296	35.08
1923 ...	88,009	19.19	40,399	20.12	19,210	24.78	21,462	33.45
1924 ...	91,381	16.74	41,047	13.89	20,074	17.34	21,616	33.91
1925 ...	94,753	15.31	42,334	13.98	20,938	17.77	21,780	29.11
1926 ...	98,125	21.01	43,662	13.28	21,838	24.41	21,936	34.55

44. Table showing corrected deaths and death-rates from principal disease:

Town.	Malaria.		Dysentery and diarrhoea.		Pulmonary tuberculosis.		Beri-beri.	
	Deaths.	Rate.	Deaths.	Rate.	Deaths.	Rate.	Deaths.	Rate.
Kuala Lumpur ...	108	1.10	179	1.82	133	1.36	28	0.29
Ipoh	49	1.12	38	0.87	47	1.08	5	0.11
Taiping	78	3.56	115	5.24	74	3.37	1	0.05
Seremban	79	3.61	61	2.79	49	2.24	7	0.32

45. Infantile Mortality Table:

Towns.	Births.	Death under one year.	Rate per 1,000 births.
Kuala Lumpur	3,645	469	128.67
Ipoh	1,364	131	96.04
Taiping	1,107	172	155.37
Seremban	664	139	209.33

46. Table showing corrected death-rates for principal diseases in the four towns for the last seven years:

Year.	Kuala Lumpur.			Ipoh.			Seremban.			Taiping.		
	Malaria.	Dysentery and diarrhoea.	Pulmonary tuberculosis.	Malaria.	Dysentery and diarrhoea.	Pulmonary tuberculosis.	Malaria.	Dysentery and diarrhoea.	Pulmonary tuberculosis.	Malaria.	Dysentery and diarrhoea.	Pulmonary tuberculosis.
1920	5.08	2.49	3.48	5.64	2.64	3.75	8.99	5.00	3.40	19.14	2.99	1.57
1921	5.25	3.63	3.22	11.24	2.39	4.54	11.76	16.71	6.23	25.06	6.06	3.95
1922	2.79	2.18	3.33	4.50	1.62	2.54	10.44	5.92	6.35	5.45	1.50	1.74
1923	2.06	1.77	2.91	1.48	1.34	3.61	2.86	3.18	2.45	6.94	2.84	3.73
1924	1.13	1.53	2.66	0.97	1.00	1.51	2.89	1.54	1.89	5.41	2.91	3.47
1925	1.46	1.14	1.75	1.77	0.66	1.51	2.58	1.62	2.72	2.85	4.40	3.81
1926	1.10	1.82	1.36	1.12	0.87	1.08	3.61	2.79	2.24	3.56	5.24	3.37

MOSQUITO-BORNE DISEASES.

47. In Malaya, these are malaria, filariasis and dengue.

48. Cases of filariasis are comparatively rare, dengue is frequently seen, but being non-notifiable statistics about it are not available.

MALARIA AND ANTI-MALARIAL MEASURES.

49. Malaria still continues to head the list of diseases as the chief cause of sickness and death in the Federation.

50. There was a considerable increase in the number of cases of this disease noted during the month of April to July, a slight increase is generally noted at this season but this year it was more marked than usual. Exceptionally heavy rains at the end of 1925 followed by a prolonged drought, and the increased amount of clearing which followed the rise in the price of rubber are two of the reasons suggested to account for this.

51. Complete incidence figures are not available and reliance has to be placed on death notifications as a basis for computation.

52. The number of deaths registered during the year as due to fever was 16,531, giving a death-rate per mille population of 12.57.

53. Nothing occurred during the year to modify the opinion that malaria prevention by mosquito reduction is the right policy where persons are grouped together in towns, in villages and on estates.

54. The Malaria Advisory Board of which the Senior Health Officer is Vice-Chairman met regularly during the year and its minutes were published in the press.

55. The Mosquito Destruction Boards continued to function and serve a useful purpose. A new Board was established at Klian Intan (Upper Perak), a small village, where malaria has been severe in the past.

56. The anti-malarial activities of the Health Branch included the teaching of mosquitology, propaganda, investigations and research, anti-mosquito measures and quinine distribution. These activities were carried out as far as time and circumstances permitted.

57. Tablets of quinine to the number of 1,043,200 were issued to the various Health Officers for ultimate free distribution to the public through the Police, the Education Department, the Post Offices and the District Officers.

MEASURES TAKEN FOR PREVENTING THE INTRODUCTION AND SPREAD OF INFECTIOUS AND CONTAGIOUS DISEASES.

Quarantine and Port Health Work at Port Swettenham.

58. During the year 75 ships with immigrant labourers were boarded and inspected. The labourers were landed at the Quarantine Camp. Of the 75 ships 21 were infected—eight with cholera, two with cholera and smallpox, four with smallpox, one with cerebro-spinal meningitis, one with cholera and cerebro-spinal meningitis and five with chickenpox.

59. The number of immigrants who entered the Quarantine Station, Port Swettenham was 99,066, the number remaining on 31st December, 1925 was 1,408 making a total of 100,474. The largest number on any one day was 7,713 on the 20th of June.

60. The following table shows how these immigrants were distributed:

Discharged to Depôt	98,184
Transferred to Klang Hospital	104
Absconded from the Quarantine Camp	55
Died in Hospital and Cholera Wards	457
Remaining on 31st December, 1926	1,697
Total ...	100,497

61. There were 457 deaths made up as follows:

Male adults	94
Female adults	57
Male minors	42
Female minors	34
Infants	230
	457

The percentage of deaths to total arrived was 0.45.

62. The daily average of immigrants in the camp was 2,445.

63. Three thousand eight hundred and ninety-seven passengers were quarantined during the year.

64. Forty-four thousand four hundred and sixty immigrants received routine treatment for ankylostomiasis.

65. Vaccinations were performed as follows:

Immigrants	97,220
Passengers	3,758
Staff and Police	155
Total ...	101,133

66. Anti-Choleraic Inoculations:

Immigrants	13,902
Passesgers	1,030
Staff, Police, Public Works Department Coolies, etc. ...	175
Total ...	15,107

67. The number of infectious diseases treated were cholera 196, smallpox 5, chickenpox 11, measles 432, cerebro-spinal meningitis 4, typhoid fever 3, erysipelas 1, mumps 1. With the exception of 13 cases of cholera admitted from the Kuala Langat district, all cases came from ships or developed the disease while in the camp.

68. The total number of persons removed to the camp from cholera infected ships was 15,061, of these 157 either developed cholera or had the disease on admission to the camp, 39 cases remained on 31st December, 1925. Of the 196 treated 79 died giving a percentage of 40.31.

Every precaution was taken to cut short the course of the epidemics. Prophylaxis by anti-cholera inoculations, and essential oils were adopted, and I think with success, as shown by the figures, 157 cases with 15,061 contacts.

Camp Hospital.

69. Sixty-nine patients remained at the beginning of the year. One thousand nine hundred and ninety-eight were admitted during the year. Of the total treated 398 died giving a percentage of 19.92. Many of the deaths were due to pneumonia, and lung complications following influenza and measles—this was particularly noticeable in the case of children.

Infectious Diseases outside the Quarantine Camp.

70. The following table shows the cases of infectious diseases reported and the State in which they originated:

State.	Smallpox.		Cholera.		Plague.		Diphtheria.		Cerebro-spinal meningitis.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Perak	—	—	—	—	—	—	14	6	17	5
Selangor ...	—	—	13	6	—	—	19	4	9	8
Negri Sembilan...	—	—	—	—	—	—	13	—	4	2
Pahang	—	—	—	—	—	—	5	2		
Total ...	—	—	13	6	—	—	51	12	30	15

71. A small outbreak of cholera occurred in March in the Kuala Langat district, there being 13 cases and six deaths. A possible cause of infection was from one of a family who had arrived from India two months previously on an infected ship, these coolies—the parents and one child—had been inmates in the non-infectious hospital at the camp. This child was suffering from measles and was much debilitated, an examination of its stool was negative for cholera. It is possible that either this child or one of its parents was an intermittent carrier. These persons absconded from the camp on March 18th; structural alterations are being undertaken which it is hoped will prevent future abscondings.

72. There were no cases of plague reported.

73. Fifty-one cases of diphtheria were reported of which 19 were in Selangor, 14 in Perak, 13 in Negri Sembilan, and 5 in Pahang.

74. The figures for cerebro-spinal meningitis were 30 cases and 15 deaths. All were sporadic.

75. The number of deaths from dysentery and diarrhoea was 2,744, giving a death-rate of 2.09 per mille population, as against 1,945 and a death-rate of 1.34 per mille in 1925.

Pulmonary Tuberculosis.

76. There were 1,873 deaths from pulmonary tuberculosis and the death-rate was 1.42 as against 2,001 and a death-rate of 1.38 in 1925.

77. With regard to the four States (Pahang no figures)—Perak had a death-rate of 1.52 as against 1.49 in 1925, Selangor had 1.14 as compared with 1.20, Negri Sembilan had 1.74 as compared with 1.65.

78. With regard to the four large towns—Kuala Lumpur had a death-rate of 1.36 as compared with 1.75 in 1925, Ipoh 1.08 as compared with 1.51, Seremban 2.24 as compared with 2.72 and Taiping 3.37 as compared with 3.81.

Helminthic Diseases.

79. The chief one of importance from a health point of view is ankylostomiasis. At least 90 per cent. of the native population harbour the worm in small numbers but few have sufficient to give rise to symptoms, unless they are also suffering from a concurrent disease such as malaria or dysentery when the combination is a very dangerous one. Ascariasis is also very common, and though in the majority of cases is not of serious import, is sometimes responsible for convulsions in children, and acute intestinal trouble.

SCAVENGING NIGHT-SOIL DISPOSAL, DRAINAGE, ETC.

Collection and Disposal of Refuse.

80. Scavenging in most towns is fairly well done. The best disposal is by incineration; dumping or the filling of swamps is not so satisfactory. Prolonged wet weather hinders incineration and leads to accumulation of refuse, with consequent fly breeding, this danger also occurs in dumping unless very careful supervision is exercised.

Collection and Disposal of Night-soil.

81. Up to date no town in the Federated Malay States has a water carriage system. Some Government and some private installations have been built and these are being watched carefully and the effluents examined with a view to determining the most suitable types of installation for a building or small groups of buildings, such as offices, bungalows or cooly-lines.

82. The system in use in most towns is the two-bucket system for the shop houses and the two-bucket system or pit latrines for the bungalows standing in their own compounds. Most of these pit latrines form fly breeding grounds and they are therefore unsatisfactory. Petroleum, lime and other larvicides have been used but unless applied lavishly do not prevent the breeding. The bucket system is being recommended for use on estate wherever possible in place of pit latrines.

83. The ultimate disposal in the bucket system is by trenching. If not carefully watched it becomes short circuited to the Chinese vegetable gardens.

Drainage.

84. Street drainage is controlled by the Sanitary Board authorities. Anti-malarial drainage is controlled by the Mosquito Destruction Boards. Many miles of sub-soil piping have been done by the anti-malaria branch of the Public Works Department.

Clearance of Bush.

85. Clearance of bush is done on public lands by Sanitary Boards or Mosquito Destruction Boards. Clearance of bush in this country is not always a profitable proceeding for at the wet hill foots it promotes the propagation of *A. maculatus*, the most powerful malaria carrier in Malaya. Many a healthy area has been rendered intensely malarial by the clearance of bush, in spite of the fact that notices pointing out this danger have been published in the press and local publications.

WATER SUPPLIES.

86. In the majority of cases towns are supplied with drinking water brought from uninhabited areas through pipes by gravitation. In some cases filters are employed, in others they have not been considered necessary. Both slow and rapid filters are in use.

87. The necessity for keeping catchment areas as free from pollution as possible has long been recognised and efforts have been made to ensure these areas being kept clear of trespassers by having them gazetted as "Forest Reserves."

88. Arrangements have been made with the Institute for Medical Research for the monthly examination of all water supplies to the larger towns in the Federated Malay States. The two supplies for Kuala Lumpur were as in previous years analysed weekly.

89. Some estates have excellent supplies, others especially those in the coastal areas are not so fortunate.

PUBLIC HEALTH EDUCATION.

90. The Public Health Education Committee met on several occasions during the year; at Horticultural Shows exhibitions were put up which were well attended, lectures were given and pamphlets which had been prepared by the Committee were distributed in large numbers in various languages.

91. Popular lectures on Malaria were given in Malay and Chinese in various parts of the country, these were illustrated by lantern slides and were well attended.

92. A cinematograph film of the work done at the Infant Welfare Centre, Kuala Lumpur was also exhibited on several occasions to large and interested audiences.

SCHOOLS AND SCHOOL INSPECTION.

93. The numbers of Government and State Aided Schools in the Federated Malay States are as follows:

Government English Schools	23
Aided English Schools	24
Government Vernacular Schools	482

Besides the above there is a considerable number of private schools.

94. The duties of school inspection were shared with the Medical Branch. Altogether 213 visits of inspection were made by the Health Staff.

95. Each school has a stock of Government quinine which is issued free of charge to those scholars who require it.

MATERNITY AND CHILD WELFARE.

96. The Infant Welfare Advisory Board met several times during the year and its minutes were published.

97. Infant Welfare Centres are established at Kuala Lumpur, Ipoh, Taiping and Seremban, the report of the work at each Centre has been published separately.

98. All the Infant Welfare Centres are under the supervision of Lady Medical Officers and have specially trained European Infant Welfare Sisters. Each has a staff of Asiatic nurses who work part time at the Centre and part time on the district. These Centres are very popular and there is no doubt are doing an immense amount of good.

99. There are three Maternity Hospitals which have been erected and maintained by the Chinese for the benefit of the poor of that nation. One is situated in Kuala Lumpur, one in Klang and another in Ipoh. These are very popular and are doing excellent work. At each there is a training school for midwives.

100. On many estates attention is paid to Maternity and Infant Welfare.

WORK UNDER THE LABOUR CODE.

101. It is the duty of the employer of labour to engage the staff necessary for the protection of health and the cure of disease amongst his employees. The Health Branch co-operates with the Labour Department with the object of securing an adequate standard of sanitation where labour is employed.

102. The total number of estates is 1,450 and the total number of estate hospitals is 156, each of these estates should be visited at least twice yearly by the Health Officer of the district but this is unfortunately not always possible.

ESTATES.

103. Details of the distribution of estate and estate hospitals and the frequency of visits by Health Officers are given below :

State.	Health district.	Estates.			Estate hospitals.		
		No.	No. of visits by H.O.		No.	No. of visits by H.O.	
			1926.	1925.		1926.	1925.
Perak ...	Perak North	267	78	48	24	15	19
	Kinta	133	64	57	6	11	10
	Perak South	255	92	116	24	18	23
Selangor ...	Selangor East	232	122	86	23	19	19
	Selangor Coast	207	135	130	34	33	36
	Bernam	4	7	6	2	2	2
Negri Sembilan ...	All districts...	352	227	131	43	56	40
Pahang	All districts...	...	...	35	...	...	15
Total, F.M.S. (Excluding Pahang). ...		1,450	725	609	156	154	164

Supplementary visits were paid by Sanitary Inspectors

104. The distribution of labour was as follows :

		Indians.	Others.	Total.
Perak	Perak North	23,594	4,050	27,644
	Kinta	8,723	892	9,615
	Lower Perak and Batang Padang ...	24,818	2,398	27,216
Selangor	Selangor East ...	20,983	5,689	26,672
	,, Coast ...	45,012	1,575	46,587
	Bernam	1,783	1	1,784
Negri Sembilan ...	All districts	23,333	18,353	41,686
Pahang	,, ...	—	—	—
	Total, F.M.S. ...	148,246	32,958	181,204

105. The table below sets out the mortality rates among estate labourers during the past sixteen years, that is, since the Health Branch took over the supervision of health condition on estates :

Year.	Total number of estate labourers.	Deaths.	Death-rate per mille.
1911	143,614	9,040	62.9
1912	171,968	7,054	41.02
1913	182,937	5,592	29.6
1914	176,226	4,635	26.3
1915	169,100	2,839	16.78
1916	187,030	3,299	17.61
1917	214,972	3,906	18.71
*1918	213,425	9,081	42.55
1919	216,573	3,384	15.16
1920	235,156	4,367	18.57
1921	175,649	3,195	18.19
1922	159,279	2,556	16.05
1923	147,276	1,924	13.06
1924	144,902	1,514	10.45
1925	146,558	1,585	10.81
1926	†181,204	†2,632	†14.53

* Influenza year. † Excluding Pahang.

106. There were 2,342 deaths among the 147,646 Indian estate labourers during the year, giving a mortality rate of 15.18 per mille as against 1,429 deaths and a death-rate of 11.95 in 1925.

107. Return of malaria admissions and deaths of Indian labourers and others in estates and Government Hospitals.

Divisions.	Malaria admissions to estates and Govt. hospitals.	Malaria deaths in estates and Govt. hospitals.	Total admissions to estates and Govt. hospitals.	Total labourers employed, all nationalities.	Total deaths.	Death-rate per mille.	Indians employed.	Deaths, Indian labour force.	Death-rate, Indian labour force.	Number of estates.	Number of hospitals.
Perak North ...	5,741	113	14,812	27,644	381	13.78	23,594	364	15.42	267	24
Kinta	2,018	64	4,586	9,615	108	11.23	8,123	107	13.17	133	6
Lower Perak and Batang Padang	2,960	83	11,375	27,216	247	9.07	24,818	239	9.63	255	24
Selangor East ...	7,878	178	19,450	26,672	410	15.37	20,983	392	18.68	232	23
Selangor Coast ...	5,561	202	15,889	46,587	653	14.02	45,012	644	14.30	207	34
Sabak Bernam ...	80	4	1,194	1,784	5	2.80	1,783	5	2.80	4	2
Negri Sembilan	9,819	296	20,460	41,686	828	19.86	23,333	591	25.33	352	43
Pahang	*										
Total ...	34,057	940	87,766	181,204	2,632	14.53	147,646	2,342	15.18	1,450	156

* No figures.

Mines.

108. The average population engaged in mining during the year was 110,293 as against 107,257 in 1925 or an increase of 3,036 due probably to the continued high price of tin.

Mines are not required to send in sickness and death returns and the sick-rates and death-rates are not known.

General.

109. The Chinese Decrepit Asylum at Port Swettenham was administered by the Health Branch for the second-half of the year, the inmates being moved from the permanent camp buildings into large attap sheds on the 22nd of June so as to leave more accommodation for Indian immigrants.

110. Owing to this accommodation being of a temporary nature admissions were stopped from June, so only 43 new cases were admitted during the year.

111. The admissions, etc., from various States are shown in the following table:

State.	Remained.	Admitted.	Total.	Discharged.	Transferred.	Absconded.	Died.	Remaining.
Perak	235	21	256	5	63	33	34	121
Selangor	139	11	150	7	30	23	19	71
Negri Sembilan ...	63	7	70	3	15	6	9	37
Pahang	4	4	8	1	1	5	1	
Total ...	441	43	484	16	109	67	63	229

112. Of the 63 deaths, 41 were due to general debility, nearly 50 per cent. of inmates remaining at the end of the year were between 60-80 years of age.

113. Four cases of Japanese River Fever—Tsutsugamushi—were admitted into hospital, three were Europeans from an oil palm estate—20 miles from Kuala Lumpur—of these one case proved fatal. The fourth case was a European rubber planter who had been inspecting estates in various parts of the country.

114. A notable event in the year was the visit of Sir Ronald Ross, K.C.B., to the Federated Malay States in December. Staying at Klang with Sir Malcolm Watson he paid visits to Kuala Lumpur on December 13th and 18th. On the former day various anti-malarial works, completed and in progress were inspected and a visit paid to the Malaria Bureau, after which the eminent malariologist was entertained to tiffin by the medical profession in Kuala Lumpur.

Kuala Lumpur,
16th March, 1927.

A. K. COSGRAVE,
Acting Senior Health Officer, F.M.S.

REPORT OF THE REGISTRAR-GENERAL OF BIRTHS AND DEATHS, FEDERATED MALAY STATES, FOR THE YEAR 1926.

The Records of Births and Deaths for the State of Pahang for the fourth quarter, 1926 and some incomplete registers of previous years were all lost in the flood of December 27th; reports from the other States indicate that registration is up to date.

The leaves forming the Original Register of Births and Deaths were received regularly and were bound in the office.

I attach a schedule of vital statistics, unfortunately those for Pahang are not available for the reason stated above.

KUALA LUMPUR,
22nd March, 1927.

A. K. COSGRAVE,
Acting Registrar-General of Births and Deaths, Federated Malay States.

FEDERATED MALAY STATES.

ESTIMATED POPULATION FOR 1926 OF ALL RACES OF EACH STATE AND FOR THE WHOLE OF THE FEDERATED MALAY STATES.

State.	Europeans and Americans.	Eurasians.	Malays and other natives of the Archipelago.	Chinese.	Indians.	Others.	Total.
Perak	2,389	1,040	260,177	228,461	160,136	1,976	654,179
Selangor	3,054	1,775	105,875	181,071	163,246	2,149	457,170
Negri Sembilan ...	1,152	548	81,797	77,943	41,748	1,069	204,257
Pahang	352	132	110,211	39,258	9,785	688	160,426
Total, F.M.S. ...	6,947	3,495	558,060	526,733	374,915	5,882	1,476,032

SUMMARY OF BIRTHS AND DEATHS FOR THE YEAR 1926.

BIRTHS.

State.	Europeans and Americans.	Eurasians.	Malays and other natives of the Archipelago.	Chinese.	Indians.	Others.	Total.	Rate per mille of popuiation.
Perak	46	32	10,175	6,118	3,676	48	20,095	30.72
Selangor ...	78	64	4,004	5,332	4,418	18	13,914	30.44
Negri Sembilan	7	31	3,343	1,523	916	5	5,825	28.51
Pahang * ...								
Total, F.M.S. †	131	127	17,522	12,973	9,010	71	39,834	30.28

DEATHS.

Perak	16	8	6,433	7,287	4,727	35	18,506	28.29
Selangor ...	16	22	2,667	5,239	5,431	15	13,390	29.29
Negri Sembilan	4	16	2,557	2,204	1,762	6	6,549	32.06
Pahang * ...								
Total, F.M.S. †	36	46	11,657	14,730	11,920	56	38,445	29.22

* No figures. † Total, F.M.S. excluding Pahang.

FEDERATED MALAY STATES.

RETURN OF DEATHS OF ALL AGES FROM PRINCIPAL DISEASES FOR 1926.

State.	Plague.	Cholera.	Smallpox.	Cerebro-spinal meningitis.	Diphtheria.	Typhus.	Yellow fever.	Malaria (including fever).	Blackwater fever.	Dysentery and diarrhoea.	Phthisis (pulmonary tuberculosis).	Pneumonia.	Beri-beri.	Enteric (typhoid).	Syphilis.	Ankylostomiasis.	Tetanus.	Cancer (including Sarcoma).	Bright's disease.	Influenza.	Ptomaine poisoning.	Convulsions.	Deaths from other diseases.	Children under one year.	Persons between 20-40.	Persons over 60.	Persons of other ages.	Total No. of deaths.
Perak	...	...	...	5	6	...	...	8,732	2	1,027	996	865	108	11	36	85	36	3	28	49	31	1,924	4,562	3,459	4,050	2,370	8,627	18,506
Selangor	...	6	...	8	4	...	...	5,011	3	1,211	521	1,201	140	10	38	101	21	7	49	20	91	1,609	3,339	2,888	3,632	1,005	5,865	13,390
Negri Sembilan ...	...	...	...	2	...	...	...	2,788	3	506	356	507	66	7	10	37	8	9	118	29	4	764	1,335	1,371	1,757	601	2,820	6,549
Pahang *																												
Total, F.M.S. † ...	...	6	...	15	10	...	...	16,531	8	2,744	1,873	2,573	314	28	84	223	65	19	195	98	126	4,297	9,236	7,718	9,439	3,976	17,312	38,445

* No figures. † Total, F.M.S. excluding Pahang.

ANNUAL REPORT OF SURGICAL DEPARTMENT, IPOH HOSPITAL, 1926.

Statistics show a steady increase of work performed, and expansion of admissions to the Surgical Wards.

Major Operations.—

Total Major Operations 248

This shows an increase, 123.4 per cent. over 1922; 77.1 per cent. over 1923; 48.8 per cent. over 1924; 16.9 per cent. over 1925.

The respective figures for these years being 111 for 1922; 140 for 1923; 169 for 1924; 212 for 1925.

These cases are exclusive of Ophthalmic Cases.

Mortality.—

Total deaths following major operations 37

Percentage 14.9 per cent.

As compared with 21 per cent. for 1922; 16 per cent. for 1923; 13.69 per cent. for 1924; 15.2 per cent. for 1925.

Emergency Operations.—

Total number ... ... 73.

,, deaths following ... ... 29.

Percentage ,, ... 39.8 per cent.

Interval Operations.—

Total number ... ... 175.

Deaths ... ... 8.

Percentage ... ... 4.6 per cent.

Minor Operations.—

Total operations ... ... 812.

Total Operations performed.—

(Minor and Major) ... ... 1,060.

Total Surgical Admissions ... ... 2,791.

Total deaths to admissions ... ... 69.

Percentage of deaths to admissions ... ... 2.1 per cent.

From 1925.—

Total Surgical admissions ... ... 2,539.

Cause of death following Major Operations.—

1.	Skull (decompression)	Cerebral haemorrhage
2.	Excision of Haemangioma (axilla)	Acute Septicaemia
3.	Ligature Brachial artery	Sapraemia from gangrene
4.	Amputation leg	Shock and haemorrhage due to extensive injury
5.	Ligative femoral artery	Shock and haemorrhage due to multiple injuries
6.	Wiring fractured femur (compound) ...	Shock and haemorrhage due to extensive injury
7.	Arthrotomy hip	Acute dysentery
8.	,, ,, ...	Toxaemia
9.	Laparotomy—general peritonitis (4 cases) ...	General peritonitis
10.	,, suture of perforated gut (2 cases)	General peritonitis
	Laparotomy—suture of gut (stab wound) ...	General peritonitis
	,, stab wound abdomen ...	Haemorrhage
	,, Liver abcess (ruptured) ...	General peritonitis
	Post gastro jejunostomy and suture of perforated gastric ulcer	General peritonitis due to perforated gastric ulcer
	Herniotomy—Ing. strangulated c peritonitis	General peritonitis
	Appendicectomy—gangrenous appendix (4 cases)	General peritonitis
	Herniotomy—Ing. strangulated and resection of gut	General peritonitis from gangrenous gut
	Splenectomy and suture of perforated stomach (stab wound)	Shock and Haemorrhage prior to operation

Intussusception—excision	Gangreunous gut
,, reduction	Acute enteritis
Casarian section	Cancer uteri
Excision of par ovarian cyst	Shock post operative
Exploratomy Laporatomy	Primary carsinoma of liver
,, ,, ...	Cancer liver
Opening septic haematoma over bladder ...	Septicaemia
Calostomy—chr. dysentery	Chronic dysentery
Hysterectomy	Septicaemia
Vesical calculi	,,
Subphrenic and liver abcess	Toxaemia
Imperforate ani	,,

REGIONAL CLASSIFICATION OF MAJOR SURGICAL OPERATIONS FOR 1926.

I. *Head and Neck.*—

Wiring—cleft palate	1
Plastic operation—hare-lip	5
Plastic operation—palate	1
Trephining skull (decompression)	1
Skull—decompression	1
Schuartze's operation—chronic mastoiditis	2
Skin grafting on neck	1
Excision of cyst of neck	1
,, tumour of neck	1
,, keloids (neck)	1
,, endothelioma of neck with removal of cervical glands	1
,, suppurating sebacious cyst (head)	1
,, Epulis (Rt. upper jaw)	1
,, haemangioma (axilla)	1
Total ...	19

II. *Upper Limb.*—

Ligature—brachial artery	1
Amputation—fingers	4
,, arm	3
,, forearm	2
Disarticulation through wrist joint	2
Excision of lipoma (shoulder)	1
Total ...	13

III. *Lower Limb.*—

Ligature—femoral artery and excision of femoral aneurism ...	1
,, external iliac (aneurism)	1
,, femoral artery	1
Arthrotomy ankle—osteomyelitis of astragalus and tibia	1
Arthrotomy—knee (suppuration)	3
,, hip	5
Wiring (fractured femur)	1
,, (patella)	1
Platiny (fractured femur)	1
Disarticulation toe	1
Amputation leg (faraboeuf's operation)	4
Sequestrectomy (osteomyelitis of tibia)	1
Skin grafting on dorsum of foot	1
Excision of pedunculated growth of knee joint with vertical division of patella	1
Excision of sarcoma (thigh)	1
,, ,, ,, (leg)	1
,, ,, cyst (knee joint)	1
,, ,, Haemorrhagic cyst (leg)	1
Total ...	27

IV. *Thorax.*—

Resection of rib necrosed	1
Stab wound of pleura, pericardium and heart stitching of pericardium	1
Excision (fibroma breast)	1
,, of carbuncle	1
Total ...	4

V. *Abdomen and pelvis.*—

Posterior gastro jejunostomy (with one case of suture of perforated gastric ulcer)	15
Anterior gastro jejunostomy	1
Hemiotomy (inguinal)	30
,, (inguinal irreducible)	1
,, (inguinal—strangulated with two cases of resection of gut)	7
,, (femoral)	1
,, (Umbilical—Repair—Mayo's operation)	1
Splenectomy (Traumatic rupture)	1
,, (Splenomegaly)	2
,, and suture of stomach (stab wound)	1
Appendicectomy	11
,, with excision of strangulated omentum	1
Appendix abcess	3
,, ,, with general peritonitis	1
Opening extraperitonial abscess	1
,, Subphrenic and liver abscess	1
,, Liver abscess	4
,, perinephric abscess	1
,, septic haematoma over bladder region	1
Chalecystostomy	1
,, for biliary calculi	1
Intestinal anastomosis for strangulated hernia	1
,, ,, (resection)	1
Exploratomy Laparotomy	6
Transpleural ,, Hydatid cyst (liver)	1
Laparotomy—general peritonitis	7
,, removal of protruding omemtum (stab wound) ...	1
,, suture of perforated gastric ulcer	1
,, ,, small rents in small gut (stab wound) ...	2
,, ,, perforated stomach (stab wound) ...	1
,, ,, perforated intestine	2
,, stab wound abdomen	1
,, haemorrhagic omental cyst	1
Talma Drummond Morrison's operation (Cirrhosis of liver) ...	2
Supra public lithotomy	9
Reduction (intussusception)	1
Excision ,, ...	1
Caesarian section	1
Colostomy for Chronic Dysentery	1

Craniotomy and forceps delivery (labour)	1
Ruptured ectopic gestation	4
Supra vaginal hysterectomy	2
,, ,, and excision of Rt. tube and left cystic ovary	1
,, ,, for myoma and excision of ovarian cyst	1
Excision of Tumour abdominal wall	1
,, ovarian cysts	3
,, bilateral cystic ovaries	1
,, par ovarian tumour	1
,, glands—septic	1
,, Pyo—salpinx	1
Pyo-salpinx—drainage	1
Opening and drainage bladder (traumatic rupture)	1
Total ...	145

VI. *Perineum.*—

Ectopic testes (lodgment and fixation)	2
Prolapse of anus (fixation)	1
Radical operation (Hydrocele tunica vaginalis)	12
Colporrhaphy—laceration and haematoma of vulva	1
Total amputation of penis	1
Perineorrahaphy	3
Repair of urinary fistula	6
External urethrotomy	2
,, ,, for calculus	1
Excision of piles	8
,, granuloma pudendi	1
Plastic operation (conginital stenosis of anus)	1
Imperforate anus	1
Total ...	40

Total major operations performed by Chief Surgeon including those performed in other hospitals 279.

During the year under review, twelve extra beds were added to the operation ward, and these have been fully occupied. A further extension of this ward will become necessary at an early date.

During the year I was on leave for a period of 10 months, the work being carried on by Mr. Dannatt and Dr. Wilson.

LIST OF OPERATIONS PERFORMED AT TAIPING HOSPITAL BY CHIEF SURGEON, PERAK, DURING 1926.

Appendicectomy	2
Herniotomy	4
Cholecystectomy	1
Removal of sabacious cyst	1
Perforated gastric ulcer	1
Incision of perianal fistula	1
Excision of contracted scar	1
Tonilectomy	1
Removal of ovarian cyst	1

LIST OF OPERATIONS PERFORMED AT BATU GAJAH HOSPITALS BY CHIEF SURGEON, PERAK, DURING 1926.

Appendicectomy	2
Amputation of finger	1
General peritonitis (gangrenous appendix—drainage	1
Circumcision	1
Appendicectomy	1
Excision of sebacious cyst	1
Circumcision	
Perforated gastric ulcer—general peritonitis—sature and drainage	1
Splenectomy	1
Drainage of psoas abscess	1
Removal of intraligamantus cyst—appendicectomy and ventral suspension	1
Removal of epithelioma (lower lip)	1
Removal of glands of neck	1
Incision of carbuncle back of neck	1
Removal of recurrent epithelioma of lower lip	1
Cystoscopic examination	1
Removal of area of chronic mastitis	1
Removal of haemorrhoids	1
Appendicectomy	1
Drainage of appendix abscess	1
Examination of shoulder—joint under anaesthesia	1
Drainage of appendix abscess	1
Incision and drainage of cellulitis of neck	1
Radical cure for hydrocele	1
Caesarian section	1
Inguinal hernia—radical cure	1
Appendicectomy	1
Ophthalmic case	1
Extraction of teeth	2
Suture of perforated pyloric ulcer—gastro-jejunostomy (posterior)	1
Examination of haemorrhoids	1
Circumcision	1

IPOH,
7th January, 1927.

C. B. PASLEY,
Chief Surgeon, Perak.

ANNUAL REPORT OF THE CHIEF SURGEON, SELANGOR.

Mr. T. W. H. Burne was acting as Chief Surgeon until the end of April when he proceeded on leave. For the remainder of the year Mr. R. M. Dannatt acted for him.

The operations performed at the three hospitals were as follows :

	Major.	Minor.	Totals.
General	189	218	407
European	46	62	108
District	71	265	336
	306	545	851

SYNOPSIS OF MAJOR OPERATIONS.

I.—At the European Hospital.

	Total.	Deaths.	Remarks.
(a) *Abdominal*—			
Appendicectomy	14	—	
Appendicectomy with drainage ...	3	—	
Closure of perforated gastro-jejunal ulcer and drainage for general peritonitis	1	1	Gastro-jejunostomy done in Europe 12 months previously
Rammstedt's operation for congenital pyloric stenosis ...	1	—	Infant 6 weeks old
Cholecystectomy	1	—	For chronic cholecystitis with gall stones
Cholecystostomy	1	1	
Lumbar nephrectomy	2	1	
Relief of acute intestinal obstruction due to adhesions	1	—	
Ileo-colostomy	1	1	For excluding inoperable car-cinoma of splenic flexure of colon
Hysterectomy	1	—	For multiple fibromyomater
Sling operation for retroversion of uterus	1	—	Chronic appendix also excised
Ovariotomy	1	—	
Salpingo-oöphorectomy	1	—	For ruptured ectopic gestation
Exploratory laparotomy	1	—	
(b) *Cranial*—			
Elevation and removal of fragments. Comminuted depressed fracture of skull	1	—	
(c) *Limbs*—			
Wiring fracture of ulna	1	—	
Plating tibia	1	—	
Excision of internal semilunar cartilege	1	—	
(d) *Perineal*			
Operations for haemorrhoids ...	5	—	
Operations for fissure in ano ...	2	—	
Operations for fistula	1	—	Excisions of fistulous tracts
Radical cure of hydrocele ...	1	—	
Radical cure of varicocele ...	1	—	
(e) *Thorax*—			
Excision fibroadenoma of breast ...	2	—	

II.—At the General Hospital.

(*a*) *Abdominal—*

	Total.	Deaths.	Remarks.
Stab wounds of abdomen	1	—	Suture of stomach
Stab wounds of abdomen	4	—	Without visceral injury
Appendicectomy	9	—	Without drainage
Appendicectomy	3	—	With drainage (for gangrenous appendicitis with peritonitis)
Drainage operations for general peritonitis of appendicular origin	6	4	
Drainage operations for localised appendix abscess	4	—	
Drainage operation for retroperitoneal iliac abscess	1	—	
Suture of perforated gastric ulcer and drainage	2	1	General peritonitis
Posterior gastro-jejunostomy ...	7	—	Five for chronic gastric, 2 for chronic duodenal ulcer
Excision of gangrenous intussusception and intestinal anastomosis	1	—	
Intestinal anastomosis for volvulus	1	1	
Partial excision of jejunum and lateral anastomosis	1	1	For congenital atresia of jejunum
Radical cure of inguinal hernia	22	—	
Operations for strangulated inguinal hernia	7	—	
Intestinal anastomosis for strangulated inguinal hernia	2	1	With general peritonitis
Operations for strangulated femoral hernia	1	—	
Operations for ventral hernia following appendix abscess ...	1	1	Died of meningitis
Cholecystectomy	2	1	
Cholecystostomy	1	1	For gangrenous cholecystitis
Drainage operations for peritonitis complicating liver abscess ...	2	1	
Splenectomy	1	1	For ruptured spleen (late)
Exploratory laparotomy	4	1	Three for inoperable carcinoma, 1 for tuberculous peritonitis
Ovariotomy	2	—	
Salpingectomy	3	—	One hydrosalpinx, two ectopic gastation
Hysterectomy	3	—	For multiple fibromyomata
Caesarean section	2	2	One in obstructed labour due to atresia vaginae. One after prolonged intrauterine manipulations
(*b*) *Perineal—*			
Operations for haemorrhoids ...	5	—	
(*c*) *Genito-Urinary—*			
Suprapubic lithotomy	5	—	
Suprapubic cystosstomy	1	1	For gangrenous cystitis
External urethrotomy	4	—	Three for stricture one for traumatic rupture
Radical cure of hydrocele ...	2	—	
Excision of tumour of spermatic cord	1	—	
Plastic operation for amputation of penis (self-inflicted) ...	1	—	

(*d*) *Gynaecological—*

	Total.	Deaths.	Remarks.
Dilation and curettage	9	—	
Excision of fibromyoma of cervix	1	—	
Excisionof vulva	1	—	For carcinoma
Perineorraphy	1	—	
Plastic operation atresia vaginoe	1	—	

(*e*) *Operations on Head and Neck—*

Elevation of fragments in compound fracture of skull	4	2	
Schwartze's operation for mastoid disease	5	1	
Heath's operation for mastoid disease	3	—	
Excision malignant glands in neck	1	—	
Excision of tuberculous glands of neck	2	—	
Excision of malignant growth of parotid	1	—	
Tonsillectomy	9	—	Five with adenoids
Tracheotomy	2	2	One late case diphtheria, one foreign body in trachea
Excision naso-pharyngeal fibroma	1	—	With preliminary laryngotomy
Nasal drainage for empyema of maxillary antrum	2	—	
Operations for hare-lip	2	—	
Partial excision of lip for lymphangioma	1	—	
Excision of submaxillary tumour	1	—	
Excision of sublingual	3	—	
Kronlein's exposure of orbit ...	1	—	For inoperable orbital tumour
Excision dermoid cyst	1	—	

(*f*) *Operations on Thorax—*

Exploration of stab wound of chest	1	—	With resection of rib
Drainage operations for empyema	3	—	,, ,,
Resection of tuberculous rib ...	1	—	
Excision of breast	1	—	
Excision of lipoma of breast	1	—	
Excision of bone in malunion of clavicle	1	—	

(*g*) *Operations on Limbs—*

Plating of humerus	1	—	For non-union
Osteotomy for mat-united humerus	1	—	
Amputations of arm	1	—	
Disarticulation of knee	1	—	For compound fracture
Amputation of leg	6	—	,, and gangrene
Operative replacement of lower femoral condyles (fractured) ...	1	—	
Excision of inter-phalangeal joint	1	—	For anchylosis
Sequestrectomies	2	—	
Removal of bullet from thigh ...	1	—	
Suture of patella in compound fracture	2	—	

III.—At the District Hospital.

(*a*) *Abdominal*—

	Total.	Deaths.	Remarks.
Drainage operations for perforated gastric ulcer	1 ...	1 ...	General peritonitis
Posterior gastro-jejunostomies ...	2 ...	— ...	For chronic gastric ulcer
Exploratory laparotomy	1 ...	1 ...	Intestinal obstruction in tuberculous peritonitis
Drainage operations for gangrenous cholecystitis	1 ...	1 ...	General peritonitis
Splenectomy	1 ...	— ...	For rupture
Appendicectomy and drainage ...	1 ...	1	
Radical cure of inguinal hernia ...	12 ...	—	
Operations for strangulated inguinal hernia	1 ...	1	
Operations for stab wounds of abdomen	2 ...	—	
Drainage operations for liver abscess	4 ...	4	
Inguinal colostomy	1 ...	1 ...	In operable carcinoma of rectum

(*b*) *Crunial*—

Decompression in tracture of skull	1 ...	—	
Operations for acute mastoid disease	4 ...	1	

(*c*) *Operations on Limbs*—

Amputation of arm	1 ...	1	
Excision of lipoma	2 ...	—	
Excision of fibroma	1 ...	—	

(*d*) *Perineal*—

Operations for haemorrhoids ...	11 ...	—	

(*e*) *Operations on Thorax*—

Drainage operations for empyema	6 ...	3	

(*f*) *Genito-Urinary*—

Suprapubic lithotomy	5 ...	—	
Suprapubic cystostomy	1 ...	1 ...	For carcinoma of bladder
Radical cure of hydrocele ...	8 ...	—	
External urethrotomies	3 ...	1	
Amputation of penis	1 ...	—	

R. M. DANNATT,
Acting Chief Surgeon, Selangor.

ANNUAL REPORT OF THE CENTRAL MENTAL HOSPITAL, TANJONG RAMBUTAN.

Sir,—I have the honour to forward the sixteenth annual report of the Central Mental Hospital, that for the year 1926.

	Males.	Females.	Males.	Females.
2. There remained on December 31st, 1925	1,145	306		
Admitted during 1926	489	155		
Discharged—Recovered	151	56		
Relieved	56	20		
Not improved ...	54	22		
Not insane	1	—		
Absconded	78	—		
Died	82	25		
Remaining on 31st December, 1926	—	—	1,212	338
Singapore.—				
Remained on 31st December, 1925	115	107		
Admitted during 1926	1	—		
Discharged ,, ...	—	2		
Died ,, ...	8	4		
Remaining on 31st December, 1926	—	—	108	101
Criminals.—				
Remained on 31st December, 1925	83	—		
Admitted during 1926	38	1		
Discharged ,, ...	17	1		
Died ,, ...	6	—		
Absconded ,, ...	2	—		
Remaining on 31st December, 1926	—	—	96	—
Kedah.—				
Remained on 31st December, 1925	104	29		
Admitted during 1926	40	11		
Discharged ,, ...	7	6		
Died ,, ...	4	3		
Absconded ,, ...	5	—		
Remaining on 31st December, 1926	—	—	128	31
Kelantan.—				
Remained on 31st December, 1925	5	1		
Admitted during 1926.	2	—		
Discharged ,, ...	1	—		
Remaining on 31st December, 1926	—	—	6	1
Total remaining on 31st December, 1926	—	—	1,550	471
Percentage of recoveries	32.15			
,, ,, deaths on total treated	5.01			
,, ,, ,, daily average	6.61			

3. This shows an increase of 126 against 150 last year and 163 in 1924. So that although there is an increase in numbers, the increase is much less than it has been of late.

4. Again the increase in Federated Malay States patients is also less than last year being 99 against 131 last year and 166 in 1924. This, too, is a cause for satisfaction, as we cannot hope to look for an actual reduction in numbers.

5. The Singapore patients decreased by 13, which is only to be expected as we have ceased to take patients from Singapore. Even so we still have 209 colony patients.

6. The Kedah patients increased by 26, against 15 last year and 22 the year before. So that Kedah has to take part of the blame for our increasing numbers.

7. Kelantan patients increased by one, but there are no figures to compare this increase with, as we only began taking Kelantan patients in 1925.

8. Criminal patients showed an increase of 13 against 6 last year and only 2 in 1924.

9. *Admissions.*—The total of admissions during the year 1926 was 735, which shows an increase of 69 on last year, when the numbers were 666. In 1924 the admissions were 614.

10. In the statistical tables which follow I shall deal, as usual, only with Federated Malay States patients.

11. We admitted last year 644 patients, made up of 489 males and 155 females which are both records. It is a remarkable fact that the admissions increase steadily year by year. Of course our general population is increasing, but I think also the institution is becoming better known year by year, and people are more willing to bring their relations, especially now that they have not to send them through the police courts.

12. The month which gave us the most admissions was October, in which there were 73, while January was second with 63 and November third with 62. Last year May showed the greatest number of admissions, followed by July and August.

13. It is remarkable that October and November showed such a large number of admissions as they are usually two of the months with small numbers of admissions. July and August are usually the months which give the heaviest admissions. I am inclined to think that this increase in the last quarter is due to the wave of influenza we have had lately, which though rarely fatal, was at times fairly severe. The centres which sent us most cases were Kuala Lumpur, Ipoh and Taiping—all urban.

14. Primary dementia again heads the list of forms of disease on admission, with recent melancholia second and recent mania third.

15. General paralysis of the insane has fallen to fifth place, while confusional insanity has gone into fourth. Even though general paralysis has gone to fifth place, it still shows 59 admissions.

16. Seeing that the classification of metal disease is not yet all that one would like to see it, we cannot place too much reliance on the primary dementia figure, as the personal equation is, as things are at present, very prone to have an undue effect, and what one man diagnoses as primary dementia might by another be classed as something else.

17. Still, there is no doubt there is an alarming increase in primary dementia, which should be taken as a warning that education might with advantage be taken a little more slowly. I have too many of the derelicts left in the track of the storm of modern education.

18. Three voluntary boarders were admitted during the year. I look as time goes on to see a large increase in this class of patient.

19. *Discharges.*—The discharges numbered 360 of whom 207 were discharged recovered and 76 relieved.

20. Of the balance of 77, seventy-six were discharged "unimproved" under bond, and were in the vast majority of cases removed by their relations who were returning to their own country. One was discharged as not insane.

21. The total 369 shows a great increase on last year when the numbers were 276, while in 1924 they were 232.

22. A large number of those discharged "relieved" would, had they been kept a little longer, have been discharged "recovered", and would have thus swelled the recovery rate, but I thought it better to allow them out to complete their convalescence at home, where their friends were anxious to have them, and obviously intended to care them.

23. By this means one hopes to encourage friends to bring their relations early, and also to remove the asylum idea.

24. *Recoveries.*—Those discharged recovered numbered 207 against 177 last year and 204 the year before.

25. The recovery rate works out at 32.15 which is slightly higher than last year when it was only 31.38 but is lower than 1924, when it was 37.99.

26. The recovery rate is not as high as it should be by any means and I hope to see it greatly improved next year.

27. There are various reasons, some of which I have already taken steps to deal with, while another cause I mentioned in paragraph 21, that is, allowing patients out to complete their recovery at home. Yet another is that we have not enough room in our acute ward (The Conolly Norman Ward), although I have been asking to have this ward improved and enlarged for the last seven or eight years. Again, of late the number of incurable diseases, i.e., general paralysis of the insane, senile and secondary dementia has increased, and naturally reduces the recovery rate. Also the floods at the end of the year prevented the sending home of 8 or 10 patients, who had recovered.

28. I mentioned in paragraphs 11 and 12 the very large increase in admission in the last three months of the year, and this too tends to reduce our recovery rate, as patients admitted from October to December do not stand much chance of being discharged before the end of the year.

29. Of the forms from which those discharged recovered were suffering on admission, recent melancholia shows the largest number of recoveries with 57. Recent mania comes next with 50, and primary dementia third with 42, bracketed with confusional insanity. If, however, we take the proportion of recovery to incidence, we find confusional insanity the most recoverable with recent mania and recent melancholia second and third; while primary dementia shows a very small recovery rate, and even of the small proportion one wonders how many will recur.

30. *Aetiology.*—Turning to the aetiological table (No. 4) we find "gastro intestinal system" has been displaced at the head of the table by "haemopoitic system". Cardio vascular degeneration comes second and syphilis third.

31. Alcohol takes fifth place appearing 78 times against 71 last year. This slight increase about corresponding to the increased number of admissions, so alcohol about holds its own as a cause; but last year and this tell a very different story to 1924 when alcohol appeared only 38 times.

32. Of course alcohol as a cause tends to increase during times of prosperity.

33. As a contrast "privation and starvation" has quite disappeared.

34. A point to be noted with regard to syphilis and alcohol is that they appear more frequently as a primary cause than as a secondary, whereas the other leading causes appear more often as contributary. Alcohol appears twice as often as a primary cause, while syphilis appears almost four times as often as a primary cause than as a contributary.

35. A great many of the cases of cardio-vascular degeneration, which is above both syphilis and alcohol, were due to either one or other of them.

36. Under "deaths" I shall again touch on alcohol and will, as I have done for years, point out the danger of turning the Chinese towards alcohol. There is no need to repeat all I have previously said, but I see no reason whatever to change my opinion on the subject.

37. However, I would again give a warning that the day is coming, if the consumption of alcohol increases as it has done, when we shall have to deal with the crimes attributable to alcohol; and this before many more years have passed.

38. Of the causes which appear less frequently "critical periods" (adolescence) and mental stress make a total of 69 between them and this taken in conjunction with the amount of primary dementia dealt with leads one to fear that all is not well with the adolescent. Education beyond their capacity is responsible for a good many of the cases I fear.

39. Malaria appears 54 times against 43 times last year, but it only appears 9 times as a primary cause.

40. I am inclined to believe that a considerable number of the cases admitted during the last quarter was due to influenza.

41. My reasons are: first that there was a very much larger number of cases admitted in the last quarter than any of the other three, which is unusual.

42. Again the large number of melancholics admitted during the last quarter.

43. In the first nine months we had 78 cases of melancholia admitted, whereas in the last three we had 35, so that nearly half as many were admitted in the last three months as in the first nine instead of one-third.

44. There must have been some reasons for such a large increase in the number of admission during the last three months. We know there was influenza about, and also know that influenza is a disease which tends to produce mental trouble; and we also know that the form of mental trouble usually caused by influenza in melancholia. Consequently I think we are justified in attributing the increased admissions during the last three months to influenza.

45. We admitted seven cases which could definitely be attributed to influenza.

46. *Deaths.*—The total deaths were 132 giving a death-rate on total treated of 5.01 per cent. and on daily average 6.61 per cent. This is the smallest we have ever had, being less than last year when the figures were 5.31 and 7.1, respectively. In 1924 the figures were on total treated 5.96 and on daily average 6.66 per cent.

47. The three principal causes of death were general paralysis of the insane which encountered for 47 deaths, pulmonary tuberculosis with 16 deaths, and dysentery 15 (bacillary 13 and amoebic 2). General paralysis of the insane shows an increase of 5 deaths on last year. The extraordinary increase in G.P.I. is one of the most remarkable facts of late years as far as our patients are concerned. It must be remembered, too, that in every possible case, probably 90 per cent., the diagnosis is confirmed by *post-mortem* examination. The Chinese, too, have almost a monopoly of G.P.I. as we had only one Tamil G.P.I. last year and no Malay, and that is the finding year after year.

48. There must be some reason for this increase in G.P.I., and also for the fact that the Chinese alone, one might almost say, suffer.

49. All nationalities, I think I might, say, suffer equally from syphilis, and years ago I put up a possible suggestion that the fact that the Chinese participated so much more than the other nationalities in speculative business, making greater demands on their brains might account for the succeptability of the Chinese to G.P.I. Now we must find a cause for the remarkable increase in G.P.I. amongst the Chinese.

50. What is the new factor?

51. I should say without hesitation alcohol. Syphilis has always been present or rather was present long before the Central Mental Hospital was thought of. Yet up to 1912, the existence of G.P.I. was denied. Its presence was proved in 1915 on cases collected in 1912, 1913 and 1914 though the cases were few, but they grew in number steadily and, since the war, have gone up by leaps and bounds year after year.

52. Sixteen years ago the Chinese had their opium and did not need alcohol. Since then opium has been, in many cases, put out of the reach of the Chinese, and discouraged in the case of those who could afford it. The result has been a steady increase in the consumption of alcohol amongst the Chinese. Along with this increase in the consumption of alcohol we had a steady increase in G.P.I. It is known that alcohol is, in the presence of syphilis, a contributary cause of G.P.I. and I am convinced that the cause of the increase of G.P.I. in the Federated Malay States is the increased consumption of alcohol by the Chinese.

53. Deaths from pulmonary tuberculosis have decreased by three—16 against 19. Taken in conjunction with our increased numbers I think we must say that pulmonary tuberculosis is not on the increase at Tanjong Rambutan, although it is well known that a mental hospital population is more prone to pulmonary tuberculosis than almost any other.

54. Deaths from dysentery too, are less though only by one, but at least we may say that we are not letting dysentery get the better of us.

55. *Malaria* only accountered for four deaths, which, seeing the extremely hard fight we had with malaria, is most satisfactory.

56. *Suicides.*—I regret to say there was one suicide. This was a case of a woman who hanged herself. This case was the result of gross negligence on the part of the night head attendant and the night attendant of the ward, as a result of which they were both dismissed.

57. *Fatalities.*—I regret to say fatalities numbered eight, which is much too long a list. Six of those were due to rupture of the spleen, four due to falls on projecting corners or the edge of bedboards, and two to blows from other patients. Of course the prevention of these—one might call them accidents—is extremely difficult. When one remembers how easily a large spleen is ruptured, one can realise the proposition one has to face.

58. There was a case of ruptured liver due to a kick from another patient while another patient died from shock following extensively fractured ribs due to a kick from another patient. To one who has seen some of the terrible kicks given by Chinese—a kick delivered with the heel, one might say straight from the hip—it is quite conceivable that one kick will cause death, but I am convinced that had we better attendants we would have fewer of these fatalities.

59. It is a remarkable fact that six out of the above list occurred in the first half of the year and five on the first three months. Attendants found that such happenings in the wards, although negligence could not be brought home to them, did not make life any easier for them.

60. *Absconding*s.—Eighty-five patients absconded during the year. This is a very large number indeed, and two more than 1925, but there were a great many more patients out at work in 1926 than in 1925.

61. This number is too large of course, but as I have said, many times before, I prefer abscondings to prison conditions. Of those who absconded many came back of their own accord, after having had a walk and a look round. Others were brought back by our own attendants, and others again were brought back by the police; while some came back on new certificates. Very few indeed were those of whom we heard no more.

62. Although I said before, I prefer abscondings to gaol conditions, I do not pretend that many of these abscondings were not due to rank carelessness, and those guilty of such were dealt with either by me or by the courts.

63. *Criminals*.—There were 38 criminal admissions in 1926 against 25 in 1925, and 21 the year before. Of these 17 were discharged against 11 last year and 13 in 1924.

64. Two criminals absconded. There is no excuse for a criminal absconding, so I charged the attendant responsible before the Magistrate, and I am pleased to say the court inflicted an adequate sentence on the man.

65. Seven criminals were discharged as not insane.

66. The criminal work is a considerable strain, and also entails a considerable amount of travelling, occupying time which would be more profitably employed at the Central Mental Hospital.

67. The admissions from Kedah numbered 51 (40 males and 11 females) against 48 in 1925 and 63 the previous year. Seven males and six females were discharged and six males died. The Kedah patients showed no marked difference to the Federated Malay States patients, and now come in under an Enactment identical with our Mental Disorders Enactment.

68. *New buildings*.—The only new building undertaken was a double quarters for clerks, which was considerably overdue.

69. The only work being done, save the clerks quarters, is the conversion of the single rooms to bedrooms, by which means I hope to give some of the better patients rooms of their own.

70. *Farms*.—The number of farms continues to increase and we have now 14, accommodating 300 patients.

71. The farms are, as I have before explained, places where the patients are to all intents and purposes free. There is an attendant in charge of each, who sees to the general wellbeing of his people, and keeps one informed on the condition of the various patients.

72. In addition to the neucleus of chronics, there is a continual stream of convalescent and recovering patients passing through on their way to the outside world.

73. A few of these patients wander away, but they almost invariably return next day or so, but, owing to the fact that as soon as their absence is noticed they are reported as absconded, they help to swell the number of abscondings.

74. The value of products sent in from the farms reached the total of $56,013.28 so that it can be seen that, in addition to the curative value of the farms, there is a considerable saving to the various votes due to the activities of the patients.

75. I attach a list of products supplied by the farms.

76. I also attach tables showing the work done in the workshops and sewing room, and their value.

77. The forest planting has progressed, and the plantations are doing well, but I have been unable to obtain more batai seeds from the Forest Department, who have now advised me to plant rain trees. Had I only known years ago that rain trees made good firewood. I could have now had a large area of timber almost ready for use, as the rain tree grows very rapidly.

78. *Anti-malarial-work*.—The work of draining, filling and oiling went on steadily, and good progress was made. In this table it will be noticed that Sungei Bulat Nos. 1, 2 and 3 are mentioned. No. 1 is the main stream and No. 2 and 3 are tributaries.

79. It will be noticed that only 520 feet of inverts were laid in the main stream against 533 in 1925, but then for the first two months of 1926 we were digging out inverts which had been laid and buried by sand in 1925, again we laid 436 ft. of cement inverts in No. 2 and 274 in No. 3, a total of 1,230 feet; the banks were all sloped and sodded in addition.

80. It was necessary in a great many places, too, to put in sub-soil drains to catch seapage which showed in the sloped banks.

81. In places the cuttings were fairly deep, at times being as deep as 10 feet.

82. We were fortunate that all our bunds held through the great rains at the end of December, with the result that we did not have our work smothered in sand, and were able to continue work as soon as the rain finished. One large bund was on the point of giving way when one of the external attendants discovered it, and we had time to put every available man on and so prevents its going. Had it gone it would have undone months of work.

83. As a result of all this work the place is being steadily dried up, and the mosquito breeding places are being removed.

84. However, we had a great deal of malaria during 1926 which caused considerable worry. At first I thought the trouble was due to a bad tindal in charge of the Mosquito Destruction Board coolies who now do the oiling. In fact I myself found unoiled breeding places. The Chairman Mosquito Destruction Board was good enough to replace this tindal by another man who did better, but a third man had to be sent down, who again improved on the second. Still we had too many cases of malaria. Then a comprehensive mosquito survey was made both inside and outside the reserve, and it was found that the malaria was not coming from the reserve or the railway line, but from places which had never been taken into consideration in neighbouring kampongs and estates, and along the river banks.

85. The Chairman Mosquito Destruction Board was good enough to send down an overseer to take charge of the work and I must say the improvement was extraordinary, and we have now little or no malaria.

86. It will be remembered that the amount of malaria increased about the middle of 1925 and continued more or less constant to the end of the year.

87. In January, 1926, we had 117 cases altogether. The number went down during the next three months and was 39 in April. May and June again were very bad with 126 and 130 cases, respectively, but from July—(97 cases)—to the end of the year things improved from 38 in August to 13 in December. The great improvement coincided with the appointment of the overseer and the extensive mosquito survey; the earlier improvement with the removal of the first tindal.

88. The malarial incidence was 1.9 on cases and 1.6 on individuals against .73 and .66, respectively in 1925, but it must be remembered that it was an extremely bad year for malaria all over the country.

89. Experiments were carried out with the treatment of general paralysis of the insane by malaria but the results were anything but hopeful.

90. Why the malaria treatment should be apparently useless in this country it is hard to say, unless it is that most of the inhabitants of the country having had a considerable amount of the malaria an antibody has been formed, which interferes with the action on the spirochaetes which takes place in a malaria free individual.

91. However I shall not try to discuss this subject further, as I believe Dr. Wilson, the Assistant Medical Superintendent, intends writing a paper on it.

92. *Staff.*—The following movements took place amongst the staff:

S. Subrahmanyam, Assistant Surgeon, Central Mental Hospital, transferred to District Hospital, Taiping on 1st April, 1926.

T. Arumugam, Assistant Surgeon, District Hospital, Taiping, transferred to Central Mental Hospital on 1st April, 1926.

B. Gopal Menon, Assistant Surgeon, Central Mental Hospital, transferred to Kuala Lipis on 1st July, 1926.

G. A. Lopez, Assistant Surgeon, Port Dickson, transferred to Central Mental Hospital on 1st July, 1926.

Mr. E. Mathieu, Agricultural Officer, Central Mental Hospital, transferred to Hill Gardens, Taiping on 1st January, 1926.

Mr. G. E. Jones, Superintendent, Hill Gardens, Taiping, transferred to Central Mental Hospital on 1st January, 1926.

Miss C. M. Ortega, Nurse, Central Mental Hospital, resigned on 11th February, 1926.

Miss S. E. Thompson, Nurse, Central Mental Hospital, appointed on 11th February, 1926.

Miss S. E. Thompson, Nurse, Central Mental Hospital, resigned on 15th July, 1926.

Miss Lee Dee Yin, Nurse, Central Mental Hospital, appointed on 1st August, 1926.

Veeramah, Female Assistant Head Attendant, dismissed on 10th February, 1926.

Coopamah, Female Assistant Night Attendant, appointed on 1st March, 1926.

Sui Raj, External Head Attendant, appointed on 1st September, 1926.

V. A. L. David, Clerk, Class III, Central Mental Hospital, transferred to Agricultural Field Officer's Office, Taiping on 1st July, 1926.

See Seng Khim, Clerk, Class III, Perak Secretariat, Taiping, transferred to Central Mental Hospital on 1st July, 1926.

Tan Seang Hong, Clerk, Class III, Central Mental Hospital, left the Federated Malay States Government to join the Straits Settlements Government service on 7th August, 1926.

Khoo Soo Chee, Clerk, Class III, Revenue Survey Office, Taiping, transferred to Central Mental Hospital on 7th August, 1926.

See Seng Khim, Clerk, Class III, Central Mental Hospital, transferred to State Engineer's Office, Taiping on 4th October, 1926.

Lam Chong Choong, Clerk, Class III, Anderson School, Ipoh, transferred to Central Mental Hospital on 4th October, 1926.

Khoo Soo Chee, Clerk, Class III, Central Mental Hospital, transferred to State Engineer's Office, Taiping on 1st December, 1926.

Lim Chooi Tee, Clerk, Class III, State Engineer's Office, Taiping, transferred to Central Mental Hospital on 1st December, 1926.

S. Saravanamuthu, Steward, went on 42 days' vacation leave from 8th January, 1926 to 18th February, 1926 and three months and 10 days' half-pay leave from 19th February, 1926 to 28th May, 1926.

Kesari Rai, Head Attendant, went on 42 days' vacation leave from 22nd February, 1926 to 4th April, 1926 and 6 months' half-pay leave from 5th April, 1926 to 4th October, 1926.

M. Kanapathipillai, Inspector, went on 42 days' vacation leave from 24th September, 1926 to 4th November, 1926 and 3 months' commuted full-pay leave from 5th November, 1926 to 4th February, 1927.

R. Kuppusamy, Probationer Dresser, District Hospital, Kuala Lumpur arrived on 20th September, 1926 as relief.

93. S. V. Suppiah, Probationer Dresser, Central Mental Hospital, sat for the Preliminary Examination for the Nursing Certificate of Royal Medico-Psychological Association on 20th May, 1926 and passed.

94. C. Mylvaganam, Probationer Dresser, and Miss Tan Guat Beng, Probationer Nurse, sat for the Preliminary Examination for the Nursing Certificate of the Royal Medico-Psychological Association on 2nd November, 1926, but the result is not yet known.

95. Head Attendant, Kesari Rai who sat for the Final Examination for the Nursing Certificate of the Royal Medico-Psychological Association of Great Britain and Ireland in November, 1925, was informed in February that he had passed. I would like to point out that when Kesari Rai came to Tanjong Rambutan he could not speak English, and that he is a man of fifty.

96. A most important appointment was that of a visiting dentist made in March, 1926, when Mr. Hitoshi Simoyama was appointed.

97. I look to a great improvement in the health of the patients and an improved recovery rate when the staff really realizes the importance of care of the mouth.

98. *Attendants.*—We suffered from a shortage of attendants both male and female all the year, and we have not been getting a good class, but this has been a trouble for years now. I do not know what has become of the type of attendant we used to get. The attendants dislike the discipline and the night duty, but things improved as the year advanced, and, though we are still short, we are undoubtedly better off than we were at the beginning of the year. Of 165 new attendants engaged during 1926 only 52 remained at the end of the year.

99. *Maintenance rate.*—The maintenance rate is $176.28 per annum against $172.96 last year which is due principally to the fact that we purchased nearly all the furniture for the 1st Class Ward out of 1926 year's vote. Had it not been for this we should have shown probably a decrease, but I do not think we can get very much lower unless contractors' prices came down. For the last few years the contractors have been steadily increasing their prices.

100. Singapore, Kedah and Kelantan pay the Federated Malay States Government for the treatment of their patients and a total of $100,702.86 was collected in fees from these Governments, and Federated Malay States paying patients $1,418.66.

101. *Amusements.*—The usual games were played in the wards—drafts, chess, dominoes, cards and in addition a few Mahjong sets were supplied to the better wards.

102. Sunday walks and trips to the town were taken as usual. The few cinemas that visited the town proved a great attraction to the patients, so many going that we now take the whole tent for one night.

103. We had to replace Sir Edward Brochman's gramaphone as it had become too decrepit for further use, and the new one now tours the wards.

104. The sports were held in July and as usual provided a day's outing for patients and attendants and produced some quite good sport.

105. The cricket XI had a much better season, and won twice as many matches as it lost.

106. Hockey was started this year and has so far proved very popular, some quite good talent being discovered amongst the patients as well as the staff.

I have the honour to be,
Sir,
Your obedient servant,

W. F. SAMUELS,
Medical Superintendent,
Central Mental Hospital, Tanjong Rambutan.

Table A.

General Table Showing the Movement of the Hospital Population. During the Year 1926.

	Certified patients.					
	M.	F.	Total.	M.	F.	Total.
On the hospital register, January 1st, 1926 ...	1,453	443	1,896			
Total cases admitted during the year	570	167	737			
Total cases under treatment during the year ...	...	...	...	2,023	610	2,633
Cases discharged or transferred during the year—						
Recovered	162	63	225			
Relieved	60	21	81			
Not improved	62	23	85			
Not insane	4	...	4			
Died during the year	100	32	132			
Absconded...	85	...	85			
Total cases discharged, transferred and died during the year...	...	...	...	473	139	612
On hospital register on December 31st, 1926 ...	...	...	...	1,550	471	2,021
Average daily number on the register during the year	...	...	1,986.62			

Table B.

Showing the Form of Mental Disorder on Admissions in the Direct Admissions During the Year 1926.

Forms of mental disorder.		Direct admissions.		
		M.	F.	Total.
Congenital of infantile mental deficiency idiocy or imbecility occurring as early in life as it can be observed.	1. Intellectual—			
	(*a*) With epilepsy	...	1	1
	(*b*) Without epilepsy	6	6	12
	2. Moral			
Insanity occurring later in life.	1. Insanity with epilepsy	5	5	10
	2. General paralyses of the insane ...	47	3	50
	3. Insanity with grosser brain lesions ...	...	3	3
	4. Acute delirium			
	5. Confusional insanity	44	17	61
	6. Stupor	...	1	1
	7. Primary dementia	183	33	216
	8. Mania—			
	(*a*) Recent	58	21	79
	(*b*) Chronic	...	2	2
	(*c*) Recurrent	2	11	13
	9. Melancholia—			
	(*a*) Recent	64	42	106
	(*b*) Chronic			
	(*c*) Recurrent	6	1	7
	10. Alternating insanity	6	...	6
	11. Delusional insanity—			
	(*a*) Systematised	6	...	6
	(*b*) Non-systematised	16	2	18
	12. Volutional insanity—			
	(*a*) Impulse			
	(*b*) Obsession			
	(*c*) Doubt			
	13. Moral insanity			
	14. Dementia—			
	(*a*) Senile	40	7	47
	(*b*) Secondary	5	...	5
	15. Not insane	1	...	1
	Total ...	489	155	644

PATIENTS DISCHARGED AS CURED DURING THE YEAR 1926.

Form of mental disorder.	Males.	Females.	Total.
1. Intellectual—			
(*a*) With epilepsy			
(*b*) Without epilepsy			
2. Moral			
1. Insanity with epilepsy			
2. General paralyses of the insane			
3. Insanity with grosser brain lesions			
4. Acute delirium			
5. Confusional insanity	34	8	42
6. Stupor	1	...	1
7. Primary dementia	38	4	42
8. Mania—			
(*a*) Recent	33	17	50
(*b*) Chronic	...	2	2
(*c*) Recurrent	1	1	2
9. Melancholia—			
(*a*) Recent	35	22	57
(*b*) Chronic	...	1	1
(*c*) Recurrent	1	1	2
10. Alternating insanity	7	...	7
11. Delusional insanity—			
(*a*) Systematised			
(*b*) Non-systematised			
12. Volutional insanity—			
(*a*) Impulse			
(*b*) Obsession			
(*c*) Doubt			
13. Moral insanity			
14. Dementia—			
(*a*) Senile			
(*b*) Secondary			
15. Not insane	1	...	1
Total ...	151	56	207

AN ANALYSE OF THE DISCHARGES AND TRANSFERS DURING THE YEAR 1926.

	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.
Discharges as recovered from—									
Direct admissions									
First attack cases	87	36	123						
Not first attack cases	30	7	37						
Cases unknown whether first attack or not	34	13	47						
Total from direct admissions	151	56	207						
From transfers—									
First attack cases									
Not first attack cases									
Cases unknown whether first attack or not									
Total from transfers									
Total discharges as recovered	...	...	...	151	56				
				Relieved.			Not improved.		
Discharges (not recovered) as—									
Relieved	56	20	76	56	20	76			
Not improved	54	22	76	...	...	...	54	22	76
Total	110	42	152						
Reasons for such discharges—									
To go to care of friends	108	42	150						
Statutory by irregularity in reception order									
Other reasons (specifying them)—									
Total	108	42	150						
Transferred as—									
Relieved									
Not improved									
Total									
Destination of such transfers—									
To leper asylum	2	...	2						
To single care									
Other destinations (specifying such)—									
Total									
Total discharges and transfers as—									
Relieved	...	...	...	56	20	76			
Not improved	...	...	...	...	...	...	54	22	76

TABLE SHOWING THE FORM OF MENTAL DISORDER ON 31ST DECEMBER, 1926, OF THOSE ON THE REGISTER AT THAT DATE.

	Forms of mental disorder on 31st December.	M.	F.	Total.
Congenital or infantile mental deficiency (idiocy or imbecility) as occurring as early in life as it can be observed.	1. Intellectual—			
	(*a*) With epilepsy	5	2	7
	(*b*) Without epilepsy	33	18	51
	2. Moral			
Insanity occurring later in life.	1. Insanity with epilepsy	47	14	61
	2. General paralyses of the insane ...	52	4	56
	3. Insanity with grosser brain lesions ...	9	6	15
	4. Acute delirium			
	5. Confusional insanity	62	35	97
	6. Stupor	5	4	9
	7. Primary dementia	380	77	457
	8. Mania—			
	(*a*) Recent	75	35	110
	(*b*) Chronic	52	8	60
	(*c*) Recurrent	15	11	26
	9. Melancholia—			
	(*a*) Recent	62	28	90
	(*b*) Chronic	59	22	81
	(*c*) Recurrent	10	7	17
	10. Alternating insanity	42	7	49
	11. Delusional insanity—			
	(*a*) Systematised	33	6	39
	(*b*) Non-systematised	42	4	46
	12. Volutional insanity—			
	(*a*) Impulse	3	...	3
	(*b*) Obsession	...	1	1
	(*c*) Doubt	1	...	1
	13. Moral insanity			
	14. Dementia—			
	(*a*) Senile	75	24	99
	(*b*) Secondary	485	158	643
	15. Not insane	3	..	3
	Total ...	1,550	471	2,021

Prospect of mental recovery ... { Favourable 278 / Doubtful 1,223 / Unfavourable 520

TABLE SHOWING THE FORM OF MENTAL DISORDER AND NATIONALITY ON ADMISSION IN THE DIRECT ADMISSIONS DURING THE YEAR 1926.

Forms of mental disorder.	Males.						Females.						Totals.	
	Chinese.	Malays.	Tamils.	Javanese.	Eurasians.	Others.	Chinese.	Malays.	Tamils.	Javanese.	Eurasians.	Others.	Males.	Females.
Congenital or infantile mental deficiency (idiocy or imbecility) occurring as early in life as it can be observed. — 1. Intellectual— (*a*) With epilepsy... (*b*) Without epilepsy	3	1	2	...	...	...	5	...	1	...	...	...	6	6
Insanity with epilepsy ...	3	...	2	...	...	...	...	1	4	...	...	...	5	5
General paralysis of the insane	44	...	1	...	...	2	3	...	...	...	...	...	47	3
Insanity with grosser brain lesion	...	...	...	...	...	1	1	1	...	...	...	1	...	3
Acute delirium														
Confusional insanity ...	24	3	17	...	...	...	8	1	8	...	...	...	44	17
Stupor	...	...	...	...	...	...	...	1	...	...	...	...	...	1
Primary dementia	87	33	59	2	1	1	11	6	12	4	...	...	183	33
Mania—														
(*a*) Recent	26	7	21	1	...	3	12	2	7	...	...	...	58	21
(*b*) Recurrent	1	1	...	...	...	...	4	4	3	...	...	...	2	11
(*c*) Chronic	...	...	...	...	...	...	...	...	2	...	...	...	...	2
Melancholia—														
(*a*) Recent	35	8	19	...	...	2	12	2	23	2	...	3	64	42
(*b*) Recurrent	2	1	3	...	...	...	...	...	...	...	...	1	6	1
(*c*) Chronic	2	...	3	...	...	1	...	...	...	...	...	...	6	
Alternating insanity ...														
Delusional insanity—														
(*a*) Systematised ...	1	1	3	...	...	...	...	...	...	...	...	...	6	
(*b*) Non-systematised ...	9	2	5	...	...	...	2	...	...	...	...	...	16	2
Volutional insanity—														
(*a*) Impulse														
(*b*) Obsession														
(*c*) Doubt														
Moral insanity														
Dementia—														
(*a*) Senile	30	7	3	...	...	...	3	...	4	...	...	...	40	7
(*b*) Secondary	2	...	3	...	...	...	...	...	...	...	...	...	5	
Not insane	...	...	1	...	...	...	...	...	...	...	...	...	1	
Totals ...	269	64	142	3	1	10	62	18	64	6	...	5	489	155

ANALYSES OF THE ADMISSIONS DURING THE YEAR 1926.

Classes of admissions.	Congenital.			Acquired.									Total.		
				First attack.			Not first attack.			Unknown whether first attack or not.					
	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.
Direct	2	1	3	365	88	453	77	15	92	45	51	96	489	155	644
Total admissions...	2	1	3	365	88	453	77	15	92	45	51	96	489	155	644

AGES.

Civil.	Year.	Less than 10 years of age.			10-14			15-19			20-24			25-29			30-34			35-39			40-44			45-49			50-54			55-59			60-64			65-69			70-74			75-79			80-84			Totals		
		M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.
The ages of the commencement of present attack.	1926	...	1	1	4	4	8	20	6	26	41	15	56	99	32	131	69	34	103	111	16	127	54	22	76	38	10	48	18	5	23	16	4	20	10	5	15	6	...	6	2	1	3	...	...	...	1	...	1	489	155	644
	1925	1	1	2	5	3	8	18	4	22	41	14	55	61	20	81	90	34	124	80	20	100	64	15	79	40	8	48	28	5	33	9	5	14	8	4	12	1	4	5	1	...	1	1	...	1	...	1	1	448	138	586
	1924	2	...	2	1	1	2	12	9	21	45	13	58	75	14	89	75	25	100	70	16	86	61	12	73	30	8	38	26	3	29	8	...	8	11	2	13	3	...	3	...	...	...	...	...	...	...	...	...	416	106	522
	1923	1	...	1	3	2	5	15	7	22	35	12	47	50	16	66	66	25	91	70	19	89	44	9	53	11	7	18	11	6	17	5	...	5	4	...	4	1	1	2	1	...	1	...	...	...	1	...	1	318	104	422

Specific Diseases which Caused Death During 1926.

General paralysis of the insane	47
Infacts of spleen	1
Phthisis	16
Valvular disease of heart	1
Leprosy	1
Cirrhosis of liver	3
Bacillary dysentery	13
Bright's disease	2
Emphysema	1
Pellagra	1
Exhaustion from acute mania	3
Cerebral syphilis	3
Chronic interstitial nephritis	5
Cardio-vascular degeneration	6
Broncho pneumonia	1
Status epilepticus	3
Lobar pneumonia	1
Cerebral malaria	1
Malignant malaria	3
Emblosim in the coronary artery	1
Abscess of lungs and pys. thorax	1
Amoebic dysentery	2
Cerebral softening	2
Pneumonia	1
Exhaustion from confusional insanity	1
Cachexia due to malignant growth of the rt. parotid gland	1
Toxaemia following gangraneous stonea titis	1
Accidents and suicides	10
Total	132

Districts from which Patients were Admitted During the Year 1926.

Sepang	2	Pulau Parit	1
Port Weld	1	Rembau	1
Bruas	3	Tapah Road	1
Ipoh	56	Papan	3
Kuala Pilah	14	Kampar	22
Kajang	6	Sitiawan	11
Kuala Kubu	10	Tapah	15
Parit Buntar	16	Batu Gajah	13
Batu Kurau	1	Kuala Kangsar	20
Kuantan	13	Seremban	30
Pulai	2	Taiping	48
Klian Intan	5	Raub	7
Pusing	3	Mentakab	4
Bentong	8	Kroh	2
Tanjong Rambutan	5	Lenggong	3
Lahat	7	Bidor	3
Temerloh	2	Selama	3
Tanjong Toalang	4	Teluk Anson	23
Kuala Krau	2	Banting	3
Kuala Kurau	1	Port Swettenham	9
Ulu Selangor	1	Chenderiang	2
Rasa	1	Jarantut	1
Batu Tiga	1	Tronoh	1
Pudu	3	Kati	1
Batang Berjuntai	1	Bahau	4
Mantin	1	Temoh	4
Padang Rengas	1	Pekan	4
Sungei Besi	2	Tras	1
Parit	2	Matang	2
Sungei Bakap	1	Blanja	1

DISTRICTS FROM WHICH PATIENTS WERE ADMITTED DURING THE YEAR 1926—(*cont.*).

Segamat	1	Rantau	1
Selim	1	Labu	1
Sungkai	3	Tg. Piandang	2
Setapak	1	Grik	1
Petaling	2	Rawang	4
Pondok Tanjong	1	Malim Nawar	2
Chemor	4	Tambun	3
Enggor	1	Batu Arang	1
Sungei Siput	6	Tampin	6
Kuala Lumpur	84	Bagan Datoh	1
Bagan Serai	16	Kuala Dipang	2
Klang	32	Kanching	1
Salak North	4	Sabak Bernam	1
Menglembu	6	Kepong	1
Kuala Lipis	10	Siputeh	3
Gopeng	5	Ampang	1
Serdang	1	Kampong Kaysa	2
Kota Bharu	4	Simpang Lima	1
Terolak	2		
Tanjong Malim	6	Total	644
Sungei Lembing	2		

Building during 1926.—

	$	c.
Epsom farm (erecting newly)	1,000	23
Brick kiln ,, ,,	167	55
Portrane farm re-lalang	279	84
Leigh farm relalang, etc.	366	48
Sungei Bulat No. 2	1,286	25
Sungei Bulat No. 3	1,081	61
Sungei Bulat No. 1	3,499	35
Dust bin, kitchen	110	72
Dust bin, workshop	45	84
Dust bin, ward No. 7	138	84
Richmond farm sinking well	190	20
Ward No. 27, concreting bathing place	85	86
Ward No. 27, fence	36	00
Cattleshed by ward No. 6, re-lalang	199	96
Moulton farm relalang	190	32
Woodside farm erecting a shed	46	54
Grange-gorman farm re-lalang	202	76
Fowl house erecting newly	69	36
Motor car shed	94	35
Horton farm cattleshed re-lalang	78	08
Horton farm sinking a well	111	43
Medical Superintendent's quarters cattleshed erecting newly	141	16
Fowl house and motor car shed erecting newly	83	96
Fowl house erecting newly	69	36
Boundary fixing iron posts	41	40
D. Ward cement concrete by side of dining hall	163	80
Bull shed floor boarding	55	00
Mowing machine shed erecting newly	57	18
Hatton farm 2″ sub-soil drain	119	60
,, 4″ ,,	238	95
,, 6″ ,,	91	30
Moulton farm 4″ sub-soil drain	100	50
,, 8″ ,,	195	00
Park 2″ sub-soil drain	304	40
Total	$10,943	18

FARM PRODUCE 1926.

			$ c.
Milk, fresh	27,515 pints	...	5,915 72
Pork	12,529.04	...	4,761 12
Fowls	24	...	12 00
Eggs, hen	2,116	...	84 64
Curry-stuff	300	...	66 00
Onions	62.07	...	6 87
Arrow root	42.10	...	19 79
Millet	294	...	23 52
Dholl, Greenpeas, etc.	405	...	32 40
Paddy to fowls	50	...	3 00
Indian corn to fowls	458	...	36 64
Tapioca	1,234	...	24 68
Sweet potatoes	2,519	...	75 57
Cocoanuts	5,019	...	250 95
Yam	644	...	70 84
Oil cocoanut	35	...	8 75
Oil kachang	25	...	7 50
Oil cake, cocoanut	76	...	5 70
Oil cake, kachang	33	...	2 31
Cigars	4,350	...	21 75
Limes	62	...	1 24
Monkey jack	49	...	4 90
Otahethi chestnut	166	...	1 66
Belimbing	59,441	...	185 88
Pomegranate	8	...	1 60
Carombolas	1,544	...	7 72
Bullock's heart	267	...	13 35
Custardapples	3,068	...	153 40
Chikus	3,857	...	154 28
Durian belanda	452	...	36 16
Bua sala	4,335	...	15 76
Guava	10,216	...	51 08
Jack fruit	288	...	144 00
Papayas	7,506	...	225 18
Bananas	886	...	1,329 00
Rambutans	4,235	...	10 59
Jambu ayer	1,964	...	9 83
Pineapples	1,192	...	71 52
Buah susu	49	...	1 47
Grenadillas	8	...	40
Pitanji	3,724	...	11 73
Oranges	4,553	...	227 65
Pomelos	62	...	12 40
Mulberry	.02 tahils	...	30
Buah Tanjong	530	...	66
Cashew	1,317	...	6 59
Cashew nuts	1,108	...	1 39
Water melon	54	...	10 80
Mangoes	541	...	96 75
Vegetables	289,075.06	...	21,633 24
	Total	...	$35,850 28
Firewood to kitchens, disinfectors, dhoby-shed infectious diseases hospital, kiln, etc., etc.	1,551 carts	...	20,163 00
	Total	...	$56,013 28

			$ c		$ c.
Bamboo Works.—					
Brooms, bamboo	5,889	at	30	=	1,766 70
Chinese hats	507	,,	60	=	304 20
Baskets, carrying vegetables	49	,,	1 00	=	49 00
,, Boiling fish	39	,,	90	=	35 10
,, washing rice	49	,,	1 00	=	49 00
,, shovels	981	,,	25	=	245 25
,, with cover	30	,,	25	=	7 50
,, carrying grass	61	,,	50	=	30 50
,, carrying pigs	2	,,	1 00	=	2 00
,, rations	122	,,	20	=	24 40
,, medicine (rattan)	1	,,	1 00	=	1 00
,, waste paper	2	,,	50	=	1 00
Sieves bamboo	6	,,	10	=	60
Tailoring.—					
Bajus, female patients	2,522	,,	25	=	630 50
Sarongs ,, ...	2,567	,,	25	=	641 75
Bajus, male patients	8,448	,,	25	=	2,112 00
Trousers ,, ...	8,382	,,	25	=	2,095 50
Shirts, male attendants	261	,,	50	=	130 00
Shorts ,, ...	269	,,	50	=	134 50
Kebayahs, female attendants	114	,,	75	=	85 50
Sarongs ,, ...	115	,,	75	=	86 25
Mosquito nets	115	,,	40		
	71	,,	50	=	81 50
Camp cot covers, canvas	13	,,	1 00	=	13 00
Canvas cover for bath tub	1	,,	2 00	=	2 00
Pillows, coir	714	,,	15	=	107 10
Pillow cases	1,350	,,	15	=	202 50
Over coats for attendants	2	,,	1 00	=	2 00
Leather slippers in pairs	9	,,	20	=	1 80
Motor bus cushions covers	6	,,	50	=	3 00
Carpentering.—					
Qualley cover, wooden	84	,,	25	=	21 00
Sand boxes, wooden	33	,,	20	=	6 60
Tin scoops	103	,,	20	=	20 60
Trays for feeding pigs	35	,,	50	=	17 50
Box for minimax	1	,,	1 00	=	1 00
Crutches pair	1	,,	3 00	=	3 00
Cocoanut ladles	8	,,	10	=	80
Inventry boards	14	,,	20	=	2 80
Wooden trays	26	,,	1 00	=	26 00
Watering cans	3	,,	1 00	=	3 00
Trollies for carrying meals	5	,,	5 00	=	25 00
Palangs for buffalo's horns	3	,,	50	=	1 50
Ladders, wooden	2	,,	5 00	=	10 00
Inverts moulds	11	,,	4 00	=	44 00
Yokes for bullockcarts	2	,,	3 00	=	6 00
Dressing boxes, tins	2	,,	1 00	=	2 00
Racks, wooden	2	,,	1 00	=	2 00
Stretcher poles, wooden	6	,,	1 00	=	6 00
Chest of drawers, wooden	1	,,	5 00	=	5 00
Mason trowels, wooden	3	,,	50	=	1 50
Bathing tins	79	,,	18	=	14 22
Mending.—					
Female sarongs	3,422	,,	10	=	342 20
,, bajus	2,809	,,	5	=	140 45
Red blankets	571	,,	10	=	57 10
White blankets	683	,,	10	=	68 30
Pillow cases	864	,,	3	=	25 92
Pillows, coir	749	,,	3	=	22 47
Canvas lock suits	89	,,	20	=	17 80
Curtains	28	,,	25	=	7 00
Attendants sarongs, females	146	,,	10	=	14 60
Female attendants, kebayahs	175	,,	10	=	17 50
Red belts	99	,,	5	=	4 95
Male trousers	4,780	,,	5	=	239 00
Male bajus	5,540	,,	5	=	277 00
Attendants shirts	92	,,	10	=	9 20
,, shorts	83	,,	10	=	8 30

			$ c.	$ c.
Miscellaneous.—				
Coffins	118	,,	2 00 =	236 00
Tombstones	118	,,	25 =	29 50
One table	1	,,	3 00 =	3 00
Farm sign-board	1	,,	1 50 =	1 50
Doors to the store	4	,,	1 00 =	4 00
Wooden cages for conveying pigs	6	,,	2 50 =	15 00
Door posts (farms)	2	prs. ,,	4 50 =	9 00
Door posts (farms)	2	prs. ,,	6 00 =	12 00
Rack for tea urn	15	,,	1 00 =	15 00
Photo frames	3	,,	1 00 =	3 00
Boxes for conveying wassermann specimen	12	,,	50 =	6 00
Goal posts	1	pr. ,,	4 00 =	4 00
Lid to refuse bin	3	,,	3 00 =	9 00
Wooden boxes for young plants	2	,,	1 00 =	2 00

Daily works.—

Laying out, weeding and clearing land for planting foodstuffs.
Drain cleaning and scavenging.
Sweeping and cleaning grass and lalang.
Carting firewood and rubbish.
Gardening.
Repairing and planting, bamboo and "bunga raya" fence.
Clearing roads and paths and weeding in fields and farms.
Boundary clearing.
Scything and rolling padang.
Woodcutting.
Clearing overgrowths on sides of drains and along pipe line.
Filling and levelling up holes and swamps.
Repairing roads and paths.
Collecting fuel for kiln and farms.
Making clay pipes and cement inverts.
Repairing and thatching farm houses.
Mowing by machine.
Working at Sungei Bulat, laying inverts and sub-soil pipes.
Ploughing by motor tractor.

			$ c.	$ c.
Repairing.—				
Bullock-carts	16	at	4 00 =	64 00
Handcarts	8	,,	3 00 =	24 00
Sledges	8	,,	5 00 =	40 00
Meal trolley	57	,,	3 00 =	171 00
Meal tray	137	,,	2 00 =	274 00
Benches	187	,,	1 00 =	187 00
Bedboards	163	,,	1 00 =	163 00
Wooden buckets	9	,,	80 =	7 20
Dining tables	8	,,	3 00 =	24 00
Chairs	2	,,	2 00 =	4 00
Attendants bed boards	5	,,	3 50 =	17 50
Currystuff pounder	1	,,	1 00 =	1 00
Farm sign-boards	2	,,	50 =	1 00
Screws	2	,,	1 00 =	2 00
Ladder	4	,,	1 00 =	4 00
Wheelbarrow	11	,,	2 00 =	22 00
Meal tray carrier	1	,,	1 00 =	1 00

REPORT ON THE WORK DONE IN COMBATING VENEREAL DISEASES IN THE FEDERATED MALAY STATES DURING THE YEAR 1926.

During the year under review considerable progress has been made with the campaign against venereal diseases. New treatment centres have been opened which were well attended, there has been an increase in the numbers attending for treatment at the old centres and re-attendance has been well maintained.

The increase made is due to the following:

(1) The careful selection of staff for each centre. Only those who have been specially trained in this branch of medicine and who take a whole-hearted interest in their work and exhibit a sympathetic attitude towards the patients are appointed.

(2) The combination of venereal diseases treatment with that for general diseases.

(3) The propaganda which has been carried out during 1924, 1925 and 1926.

PROPAGANDA.

Lantern Lectures.—I delivered lectures illustrated by lantern slides in different clubs throughout the Federated Malay States. The lectures were on the lines of those given in 1925, the largest attendance was at Taiping and consisted mostly of Malays, this was mainly due to the great interest taken by the District Officer, Larut. As a result of this lecture one of the leading Malays of the State of Perak, at his own expense sent several Malays to Kuala Lumpur for treatment, and he expressed a desire to assist in propaganda as in some of the Malay kampongs venereal diseases are very prevalent, for which purpose he has been supplied with a copy of my lecture, a set of slides and a lantern.

At the Agricultural Show held in Taiping during the 14th and 15th of August a room was set aside for the purpose of delivering a series of lantern lectures. The number attending these lectures approximately 960. A collection of photographs, mostly taken from life showing the dangers of venereal diseases were exhibited with explanatory text in different languages. Pamphlets in different languages were distributed.

2. At the Agricultural Show held in Kuala Lumpur during the month of August a portion of the space allotted to the health section was partitioned off for venereal diseases propaganda and a dresser from the venereal diseases staff was in constant attendance. The photographs mentioned in the preceding paragraph were exhibited and pamphlets distributed. This portion of the health section was very well attended by all nationalities.

3. *Posters and Pamphlets.*—A new series of posters have been printed in English, Chinese, Malay, Tamil and Urdu; these are exhibited in public places. A pamphlet has been prepared explaining briefly and concisely the dangers of contracting venereal diseases; the early signs and symptoms; and the importance of early and continued treatment. In addition to the above methods opportunity is taken in the Hospitals, Town Dispensaries and Clinics to educate the public—those attending these institutions are made to understand the dangers of venereal diseases and the importance of early and continued treatment.

4. As in 1925 the professional education of Assistant Surgeons and dressers has been carried on. Practically the whole of the subordinate staff of Perak, Selangor and Negri Sembilan received a course of instruction in venereal diseases and their treatment. It was not found possible to give this course to the staff in Pahang but this is to a certain extent was remedied by the distribution of my lectures.

PROPAGANDA LECTURES.

SELANGOR.

KUALA LUMPUR.

Date.	To whom lectured and place.	Attendance.	Time.
22-2-26 ...	Railway Institute	70 ...	7.00 p.m.
22-4-26 ...	Tamilians Physical Culture Association ...	40 ...	7.00 ,,
1-3-26 ...	Juvenile Athletic Association	60 ...	7.00 ,,
3-3-26 ...	Selangor Indian Association	90 ...	7.00 ,,
5-10-26 ...	Young Men's Christian Association	55 ...	6.45 ,,
18-11-26 ...	Railway Institute	60 ...	6.30 ,,
29-11-26 ...	Confuscian School	75 ...	6.30 ,,

PERAK.

			Attendance.		Time.
		TAPAH.			
16-6-26	...	Police and Malays (in one of the hospital wards)	105	...	7.00 p.m.
17-6-26	...	Chinese (in one of the hospital wards) ...	120	...	7.00 ,,
		IPOH.			
30-6-26	...	The Perak Amateur Dramatic Association ...	115	...	6.30 ,,
		TAIPING.			
13-7-26	...	Chinese and English-speaking people of Taiping (at the Town Hall)	95	...	7.00 ,,
14-7-26	...	Malays and Police of Taiping (at the Town Hall)	400	...	8.00 ,,
14-8-26 and 15-8-26	...	At the Agricultural Show, Taiping ... ... (12 lectures)	960		

NEGRI SEMBILAN.

		KUALA PILAH.			
21-4-26	...	Police, Malays and Chinese (at the English school)	110	...	7.00 ,,
		TAMPIN.			
27-4-26	...	Government servants and others	50	...	7.00 ,,
28-4-26	...	Police, Malays and Chinese (at the Government English school)	60	...	7.00 ,,
		SEREMBAN.			
1-10-26	...	Clerks and other English-speaking portion of the native community (at the Miners' Association, Seremban)	50	...	7.00 ,,

STAFF.

There has been no increase to the staff during the year, although specially selected and well trained Assistant Surgeons are necessary for each main treatment centre.

Specialist, Venereal Diseases	Dr. E. A. Smith
Assistant Surgeon	Mr. G. H. Oorloff
Nurse	Mrs. V. M. de Lile
Dresser, Grade II	Mr. V. Nadayson
Dresser, Grade II	Mr. A. Sinnappu
Dresser, Grade II	Mr. D. Arunasalam
Dispensary Dresser, Grade II	Mr. Teh Tai Seng
Dresser, Grade III	Mr. S. Ponnusamy
Dresser, Probationer	Mr. T. Suppiah
Laboratory Dresser, Probationer	Mr. Low Pak Foon
Attendant	Retnam
Attendant	Gopal
Attendant	Ah Loke
Attendant (female)	Leong Sai

I should like to mention that the whole staff has worked extremely well, and to specially commend dresser Sinnappu's work in Klang as it was largely due to his efforts that the Klang Treatment Centre has been such a success. Dresser Arunasalam is also to be commended for the neat work he has done in printing the graphs attached to this report.

TREATMENT CENTRES.

In my annual report for 1925 six main treatment centres were suggested, four of these are now equipped and working, viz.—Kuala Lumpur, Seremban, Klang and Taiping.

2 A main centre was opened in Klang during the month of July. It will be seen from the accompanying graph No. 1 that this centre was necessary; it has quickly established itself and become popular.

The Acting Senior Medical Officer, Selangor, has shown an extremely sympathetic attitude towards the venereal diseases campaign in his State. He has rendered every help possible, especially as regards staff and equipment. Specially selected dressers are sent to the venereal diseases wards, District Hospital, Kuala Lumpur, and to the Sultan Street Clinic for training in venereal diseases; when efficient they are drafted to other main or sub-centres.

3. Alterations to the Town Dispensary, Seremban, were completed during the year, converting the Infant Welfare Centre into a Venereal Diseases Clinic (the Infant Welfare Centre moving into the adjoining house.) This centre was opened in October.

4. The Taiping Centre was opened during the early part of the year. Work here unfortunately has been of a spasmodic nature owing to shortage of staff, the Malay Assistant Surgeon having other duties to perform is not able to devote sufficient time to this centre. This is regrettable as there are many Malays in the neighbourhood who would come for treatment.

The alterations necessary to convert the old Infant Welfare Centre, Ipoh, into a Venereal Disease Clinic were completed in the middle of December.

Provided there is available staff, clinics will be shortly opened in Teluk Anson and Kampar.

The Senior Medical Officers have rendered all assistance possible over the important factors of staff and equipment.

KUALA LUMPUR.

There are two main treatment centres in Kuala Lumpur:

(A) attached to the Government Town Dispensary, Sultan Street.

(B) in the District Hospital for indoor and outdoor patients.

(A)—GOVERNMENT TOWN DISPENSARY AND VENEREAL DISEASE TREATMENT CENTRE, SULTAN STREET.

The two shop-houses in Sultan Street which have been rented since 1924 are still being used as the Town Dispensary and Venereal Diseases Treatment Centre.

During the year, 3,222 patients of both sexes, suffering from venereal diseases, received treatment, showing an increase as compared with 2,328 in 1925 and 35,289 received treatment for other diseases in the Town Dispensary in 1926 as compared with 29,335 in 1925.

2. Following table shows nationalities and diseases:

Nationality.	Total.	Syphilis.	Per cent.	Gonorrhoea.	Per cent.	Soft sore.	Per cent.
Chinese ...	2,069 ...	1,423 ...	88.77 ...	505 ...	24.40 ...	141 ...	6.91
Tamils ...	531 ...	244 ...	45.95 ...	246 ...	46.32 ...	41 ...	7.72
Malays ...	171 ...	108 ...	63.15 ...	59 ...	34.51 ...	4 ...	2.38
Sikhs ...	183 ...	116 ...	63.33 ...	58 ...	31.69 ...	9 ...	4.91
Eurasians	48 ...	16 ...	33.33 ...	26 ...	54.16 ...	6 ...	12.5
Europeans	152 ...	26 ...	17.1 ...	113 ...	74.34 ...	13 ...	8.55
Others ...	68 ...	29 ...	42.64 ...	29 ...	42.64 ...	10 ...	14.7
Total ...	3,222 ...	1,962 ...	60.89 ...	1,036 ...	32.15 ...	224 ...	6.95

It will be seen from this table that the Chinese are the heaviest sufferers from syphilis and Europeans from gonorrhoea; it was the same in 1925.

3. Eighty-seven patients attended for prophylactic treatment during the year.

4. Table showing admissions during 1925 and 1926:

	1925.		1926.
Chinese	1,496	...	2,069
Tamils	398	...	531
Malays	96	...	171
Sikhs	172	...	183
Eurasians	33	...	48
Europeans	84	...	152
Others	49	...	68
Total ...	2,328	...	3,222

=increase of 894.

During 1926, there has been an increase of all nationalities, Malays and Europeans being specially noticeable.

5. It will be seen from graph No. 2 (showing admissions and diseases) that the largest number attended during the month of October; this was also the case in 1924 and 1925; I am unable to account for this.

Out of the 3,222 patients treated 627 were females.

RECORD OF WORK IN MALE SECTION.

Irrigations	9,883
Prostatic massage	385
Sounds	484
Urethroscopic examinations	95
Arsenical N.A.B. injections	829
Stabilarsan injections	3,102
Bismostab injections	3,541
Sulfarsenol	29
Vaccine	12
Wassermanns	353
Examination of microscopic slides	3,303

FEMALE SECTION, SULTAN STREET CENTRE.

During the year 1926 six hundred and twenty-seven patients received treatment as compared with three hundred and thirty-five in 1925. The following table shows nationalities admitted during 1925 and 1926.

Nationality.	1925.	1926.
Chinese	254	475
Tamils	37	64
Malays	17	51
Sikhs	12	15
Eurasians	3	12
Others	13	10
Total	335	627

=increase of 292.

It is encouraging to note the increased attendance of Malays.

2. RECORD OF WORK DONE IN FEMALE SECTION.

Douches	1,652
Arsenical injections	689
Bismostab injections	689
Wassermann blood test	42
Microscopic examinations	1,529

3. Eighteen ante-natal cases received treatment; six of these were sent by the Infant Welfare Centre, the remaining twelve came of their own accord.

4. During 1924, 1925 and 1926, endeavours were made to persuade the prostitutes to come for examination and treatment. A lantern lecture was given to the brothel keepers; the dangers of venereal diseases and the importance of early and continued treatment were fully explained. The keepers then visited the clinic for the purpose of discussing whether or not they would consent to their girls coming. Their wishes as regards privacy and who should examine them, etc., was met in every way. The whole of the upstairs of one of the shop-houses has entirely been allotted to them. It was possible to arrange for an entrance and exit into a back lane thus obviating their passing through the dispensary. Eventually one brothel agreed to try the experiment which was successful and when the girls saw what was being done for them and the advantages of attending were explained, no further opposition was raised. In September all the Chinese prostitutes in Selangor came for examination, and treatment when necessary; this continued to the end of the year; number of prostitutes attending the clinic since the month of September=1,406.

Mrs. V. M. de Lile, the nurse, who speaks many Chinese dialects fluently, and the Chinese amah deserve every credit for the tact, consideration and kindness shown to the girls. It is largely due to their efforts that the prostitutes come willingly.

All the girls now realise the danger of contracting venereal diseases and the importance of early and continued treatment, in fact they now come for the most trifling ailments.

The nurse gives the girls instruction in general hygiene as well as in venereal diseases.

(B)—DISTRICT HOSPITAL, KUALA LUMPUR. VENEREAL DISEASES TREATMENT CENTRE.

During the period under review 1,414 patients of both sex indoor and outdoor received treatment.

The following table shows nationalities and diseases:

Nationality.	Total.	Syphilis.	Per cent.	Gonorrhoea.	Per cent.	Soft sore.	Per cent.
Chinese	447	305	68.2	98	22.0	44	9.8
Tamils	733	393	53.6	249	34.0	91	12.4
Malays	137	83	61.0	48	35.0	6	4.0
Sikhs	30	10	33.0	18	60.0	2	7.0
Eurasians ...	12	4	33.0	7	59.0	1	8.0
Europeans ...	3	1	33.0	2	67.0	—	—
Others	52	28	53.8	22	42.2	2	4.0
Total ...	1,414	824	58.2	444	31.4	146	10.2

It will be seen from this table that the Chinese are the heaviest sufferers from syphilis; it was the same in 1925. Out of the total number treated 252 were females and 1,162 were males.

	Males.	Females.
Indoor	936	120
Outdoor	226	132
	1,162	252

Following table shows numbers receiving treatment during 1925 and 1926.

1925.	1926.
1,281	1,414

RECORD OF WORK.

Irrigations	7,653
Prostatic massage	346
Sounds	15
Urethroscopic examinations	3
Arsenical injections (Novarsenobillon Stabilarsan)	3,065
Sodium thiosulphate	69
Bismostab injections	1,780
Sulfarsenol	96
Buboes aspirated	68
Wassermanns	1,160
Examination of microscopic slides	111
Lumbor puncture	9
Sulphostab	24
Contramine	92

SEREMBAN TREATMENT CENTRE.

During the year, 782 patients of both sexes received treatment. This centre was transferred from the General Hospital to the Town Dispensary in October. It will be seen from graph No. 3 the admissions from that time onwards have greatly increased.

The following table shows the nationalities and diseases:

Nationality.	Total.	Syphilis.	Per cent.	Gonorrhoea.	Per cent.	Soft sore.	Per cent.
Chinese ...	421	292	69.35	90	21.37	39	9.26
Tamils	183	95	51.91	69	37.7	19	10.3
Malays	60	31	51.66	26	43.33	3	5.00
Sikhs	35	20	57.14	10	28.57	5	14.26
Eurasians ...	17	9	52.94	6	35.29	2	11.76
Europeans ...	21	5	23.8	15	71.42	1	4.76
Others	45	28	62.22	14	31.11	3	6.66
Total ...	782	480	61.38	230	29.41	72	9.2

RECORD OF WORK.

Irrigations	2,023
Prostatic massage	379
Urethral dilations	66
Stabilarsan injections	1,063
Mercury injections	366
Bismostab injections	308
Sulfarsenol injections	195
Buboes aspirated	93
Wassermanns	299
Examination of microscopic slides	464

STAFF.

Assistant Surgeon	Mr. S. K. Rajaretnam
Dresser, Grade III	Mr. Kandiah

KLANG TREATMENT CENTRE.

The Town Dispensary, Klang, has been altered to allow patients suffering from venereal diseases to be treated there. Work was first commenced in July and from that time to the end of the year 463 patients (of both sexes) received treatment. Graph No. 1 shows admissions and diseases. It will be seen from the graph that there has been a steady and continuous rise in the number of cases admitted for treatment.

The following table shows nationalities and diseases:

Nationality.	Total.	Syphilis.	Per cent.	Gonorrhoea.	Per cent.	Soft sore.	Per cent.
Chinese	169	113	67.04	38	22.48	18	10.65
Tamils	236	35	36.01	110	46.61	41	17.37
Malays	24	11	45.83	9	37.5	4	15.16
Sikhs	21	7	33.33	10	47.61	4	19.04
Eurasians	3	1	33.33	1	33.33	1	33.33
Europeans	—	—	—	—	—	—	—
Others	10	2	20.00	8	80.00	—	—
Total	463	219	47.3	176	38.6	68	14.68

RECORD OF WORK.

Irrigations	916
Prostatic massage	75
Urethral dilations	25
Urethroscopic examinations	5
Novarsenobillon injections	202
Stabilarsan injections	293
Bismostab injections	380
Sulphostab injections	26
Wassermanns	6
Examination of microscopic slides	194

STAFF.

Assistant Surgeon	Mr. V. S. Bhattal
Dresser, Grade II	Mr. A. Sinnappu

A record has been kept during the last four months of the year of those cases suffering from gonorrhoea admitted into the venereal diseases wards, District Hospital, Kuala Lumpur, and those who were treated at the Sultan Street Clinic, showing numbers who came for treatment in the acute and chronic stages of the disease.

	District Hospital.	Sultan Street.
Acute	58	117
Chronic	22	126

Table showing number of indoor and outdoor male and female patients who attended the *District Hospital* Clinic for arsenical injections during the year 1926.

Nationality.	Number of injections.										Total.
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	
Chinese	30	41	29	23	26	34	20	14	7	25	249
Tamils	53	46	37	53	38	39	21	15	9	20	329
Malays	6	14	4	9	11	7	7	6	1	2	67
Sikhs	2	2	2	3	3	1	1	...	...	...	14
Europeans	...	...	...	...	1	...	...	...	...	...	1
Eurasians	...	...	...	...	...	...	...	...	...	1	1
Others	2	...	3	3	3	1	1	1	...	2	16
Total ...	93	103	75	91	82	82	50	34	17	50	677

It will be seen from this table that out of the total of 677 patients who received treatment 50 attended a full course.

Table showing numbers and nationalities who received arsenic injections in the *Male* section of the *Sultan Street Venereal Diseases Treatment Centre*, Kuala Lumpur, during the year 1926.

Nationality.	Number of injections.										Total.
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	
Chinese	195	165	89	66	36	56	20	40	18	56	741
Tamils	46	27	4	8	8	4	1	3	3	7	111
Malays	38	16	6	3	4	2	1	1	2	1	74
Sikhs	16	13	11	4	3	6	4	3	2	3	65
Europeans	2	1	...	1	1	1	...	1	2	...	9
Eurasians	4	2	...	...	1	...	...	...	...	1	8
Others	2	3	2	1	2	...	1	...	...	1	12
Total ...	303	227	112	83	53	69	27	48	27	69	1,020

It will be seen from this table that out of the 1,020 patients 69 attended a full course.

Table for the female section of the Sultan Street Venereal Diseases Treatment Centre.

Nationality.	Number of injections.										Total.
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	
Chinese	44	39	17	16	8	9	2	4	9	14	162
Tamils	3	7	...	5	3	2	...	...	1	...	21
Malays	10	9	8	2	3	4	...	1	1	2	40
Sikhs	3	2	5	...	...	...	...	...	...	1	9
Eurasians	...	...	...	...	...	1	...	...	...	1	2
Others	1	...	1	...	...	1	...	1	...	1	5
Total ...	61	57	29	23.	14	17	2	6	11	19	239

It will be seen from this table that out of the total of 239 patients 19 attended a full course.

From the above it is seen that the Chinese attendance is better than other nationalities.

FEDERAL HOME FOR CHINESE WOMEN AND CHILDREN, KUALA LUMPUR.

I paid 41 visits during the year to the above Home. A small clinic equipped with the necessary instruments and drugs was opened in March. The head matron of the Home attends to all cases who require treatment. There were 73 admissions to the clinic; of these, 32 were found to be suffering from syphilis and the remaining 41 from chronic cervicitis, gonococci were found to be present in 17 out of the 41.

Sixty-eight bloods were sent for the Wassermann test; thirty-two gave a positive reaction.

One thousand and fifty-four smears from the urethra and cervix were sent to the Sultan Street Clinic for examination.

ARSENICAL PREPARATIONS.

Stabilarsan has been used to a large extent during the year. I prefer this to other preparations being in solution it is easily administered.

2. Bismostab has taken the place of mercurial cream, for the excellent reason that it causes practically no pain.

3. A supply of sulphostab was received from Boots Pure Drugs Co., for the purpose of giving this preparation a trial. Five cases are quoted below.

4. Contramine has been used with good results in treating gonorrhoeal arthritis.

5. *Sulfarsenol.*—Good results were obtained with this preparation last year in treating cases of epididymitis. I have had the same satisfactory results this year.

6. *Hexyl Resorcinol.*—This has been found to give good results in all affections of the posterior urethra; both in the acute and chronic condition the urine clears rapidly.

Sulphostab "Boots"—Cases Treated With.

(1) Female Chinese, aged 30, suffering from cerebral syphilis: On admission her blood was positive to the Wassermann test. She presented the following symptoms: Some time before admission into hospital she suffered from headaches. On admission it was not possible to obtain many details as patient was not able to speak. She had facial paralysis right side, gait spastic, walking with difficulty. Knee jerks + +, Rhombergs sign present. Eyes: left eye absent; right eye serpiginius ulcer of cornea.

The following treatment was prescribed—

Sulphostab.—

0.3 gm. twice a week for five injections ...	...	...	=1.5	gms.
0.45 gm. once a week for five injections ...	...	...	=2.25	,,

Bismostab.—

½ c.c. once a week for eight injections ...	...	...	= .8	gms.

Potassium Iodide.—Starting with 10 grains three times a day; this was increased every third day until a maximum of 30 grains three times a day was reached, then gradual reduction of dose to 10 grains three times a day.

Her condition at the end of this course showed some improvement—being able to walk much better; gait no longer spastic, general health better, gradually increasing in weight, though she is unable to speak and the facial paralysis being still present.

Blood Examination.—Wassermann test done six weeks after last injection of sulphostab was found to be negative.

This is a difficult case to expect any marked improvement as it is most probable the affected part of the brain is damaged to such an extent that recovery of the part is impossible but her blood becoming negative six weeks after termination of one course is distinctly encouraging. She will shortly be placed on a further course.

(2) Male Chinese, aged 40 years, admitted on 20th August, 1926, suffering from acute pain and swelling of right knee joint; he was unable to walk; a urethral discharge was present in which gonococci were found. Patient stated that this was his first attack. He received eleven injections of sulphostab .3 gm. no very marked improvement resulted but the acute condition subsided; patient is able to walk with the aid of a stick, there being a certain amount of ankylosis on the knee joints due to patient refusing to move his joint in the earlier stages of the disease but this will, I think, improve later on.

(3) Male Malay, aged 36, admitted on 28th September, 1926, suffering from acute pain and considerable swelling of right foot; the tarsal and metatarsal joints affected; patient was unable to walk; urethral discharge was present containing gonococci. He received eight injections of sulphostab 0.3 gm. The pain has completely disappeared; swelling gradually decreasing and he is able to walk. Patient was discharged on 18th December, 1926.

(4) Male Chinese, aged 28, admitted on 16th October, 1926, suffering from pain and swelling of both knee joints, also right ankle and right metartarso phalangeal joints. Condition on admission very acute—patient unable to walk; a urethral discharge present containing gonococci. He received five injections of sulphostab of 0.3 gm., three days after the first injection a marked improvement was noticed, pain much less; patient able to walk a little; this improvement continued. Patient left hospital on 10th November, 1926, quite cured. Stay in hospital = 26 days.

(5) Male Tamil, aged 30, admitted 29th October, 1926, suffering from acute pain and swelling of both wrist joints; a urethral discharge was present which contained gonococci. Patient's mouth was in a very bad condition—pyorrhoea being present. He received five injections of sulphostab 0.3 gm. Six days after first injection a marked improvement was noticed; pain and swelling much less, this improvement continued. Patient leaving hospital quite cured on 19th November, 1926. Stay in hospital = 21 days.

All these four cases of gonorrhoeal rheumatism were in the chronic stage of gonorrhoea and received in addition to the sulphostab injections, a course of prostatic and seminal vesicular massage (gonococci found to be present in smears taken from these glands) also they were made, as far as possible, to perform active movements of the inflamed joints.

In the first two cases no marked improvement occurred though progress towards recovery is being made. The last two can be considered to have done well. All the injections were given at an interval of four days.

The above cases were treated in the venereal diseases wards, District Hospital, Kuala Lumpur.

In the venereal diseases wards, District Hospital, Kuala Lumpur, the following record was kept during the second half of the year showing number of cases who suffered from a rise of temperature after intravenous injections of novarsenobillon and stabilarsan.

	Novarsenobillon.	Stabilarsan.
Number of injections	163 ...	164
Temperature—numbers	102 ...	98
Time after injection	1½ to 2 hours ...	1 hour
Highest temperature recorded	101 F. ...	103 F.

Tamils suffered more than the other nationalities.

Buboes.

One hundred and fifty-three cases were treated during the year. Of these, 85 were treated by aspiration and injections of mercurochrome 2 per cent. 68 subsided under treatment with glycerine and ichthyol.

Epididymitis.

Twenty-two cases were admitted during the year. Of these, 16 were treated with sulfarsenol with the usual good results. Six were treated with contramine and London Lock Hospital vaccine; the results were not so satisfactory as with sulfarsenol.

Granuloma Inguinalae.

Five cases received treatment during the year. One gave a positive blood Wassermann. They consisted of the following nationalities:

Sikh	1
Chinese	2
Tamils	2

All received tartar emetic intravenously, 2 per cent. mercurochrome applied locally, and heliotherapy.

The Sikh made a perfect recovery, the remaining four very slight progress. One of the Tamils received X'Ray treatment; he showed no improvement. One of the Chinese had the growing edge of the granuloma burnt by fulguration; he received one application—this was followed by a marked improvement. I propose giving this treatment a further trial.

Gonococcal Arthritis.

Thirty-two cases received treatment during the year. For the first six months various drugs were tried; of these contramine gave the most satisfactory result. For the last six months a careful record of all cases has been kept. Of these, 14 received a course of contramine and 4 sulphostab. *See* chart. No. 4.

Gonococci were found in all cases, either in the meatal discharge or in the material from the prostate and seminal vesicles. In addition to the contramine injections patients were given a course of prostatic and seminal vesicular massage; they were also made to perform active movements of the inflamed joints.

Noma Pudenda (Spirochaetal Gangrene).

Two cases received treatment—

Case 1.—Occurred in a young Tamil woman who came into hospital with the whole of the left labium major and minor in a gangrenous condition extending up to the vaginal wall on the same side to some considerable extent.

Duration eight days.

On admission her condition was one of general toxaemia.

Treatment started at once.—All the gangrenous sloughs cut away until healthy tissue was reached; wound then dressed every two hours with hydrogen peroxide and bismuth formic iodide for two days; the dressing was then changed to a 2 per cent. mercurochrome three times a day for twelve days, after which it was done once daily. Patient ultimately recovered; there was a considerable loss of tissue; the whole of the left side of the vulva being completely destroyed exposing the lower portion of vagina.

Laboratory report.—Smears showed staphylococci, streptococci but the main feature was the presence of a large number of spirochaetes with loose open spirals, and fusiform bacilli.

Case 2.—Occurred in a female Chinese, aged 35 years, with the whole vulva in a gangrenous condition; also mouth, lips and left side of face affected, the latter to such an extent that left cheek had sloughed away. Her condition was one of extreme emaciation and toxaemia.

Treatment started at once.—Hourly applications of hydrogen peroxide and dusting with bismuth formic iodide; this proved of no avail; her general condition being very bad, death occurred shortly after admission.

Haemorrhagic Encephalitis.

Male Chinese, aged 29; occupation: motor salesman. Admitted into General Hospital, Kuala Lumpur, on 1st November, 1926; died at 1.30 a.m. on 10th November, 1926.

The following facts were obtained from his wife who stated he never had any illness during the time she had known him. On 30th October, 1926, at about 12 noon he is said to have had an injection of novarsenobillon; the same afternoon he felt giddy and feverish, at 5 a.m. on 31st October, 1926, he fell down unconscious.

Condition on admission.—Patient, a man of very good physique, admitted in an unconscious state; no evidence of external injury to head or elsewhere; heart, lungs, spleen, liver—nil of note, pulse: good tension and volume, knee jerks: absent, kernigs sign: not present, pupils both dilated, equal and react sluggishly to light, no paralysis, no rigidity of neck muscles, irritable, keeps rolling about the bed, resents very much being touched, twitching of muscles on left side of face, incontinence of faeces and urine, temperature 99° F. Following is report on funduscopic examination.—"Both eyes discs haemorrhagic to a slight extent, showing punctiform haemorrhages all over; the outlines of the discs are not lost but are slightly ill-defined; retinae also slightly pale. Blood vessels are clear and well defined but appear less full. The entire picture is suggestive of either diffuse inflammation of brain tissue or increased intra cranial pressure but more likely the latter".

Patient's condition remained unchanged, very restless, continually trying to get out of bed resenting any restraint; great difficulty in getting him to take any fluids.

On the day after admission patient's temperature became subnormal—98° F. and remained so until day prior to death when it again rose to 100.5°F.; the day he died it gradually fell; becoming subnormal just before death; which occurred at 1.30 a.m. on 10th November, 1926.

A lumbarpuncture was done the day after admission; 20 c.c. cerebro spinal fluid withdrawn under pressure; this was sent to the Government Laboratories for a report, which reads as follows: "sediment chiefly red blood cells; no organism seen". The following treatment was prescribed: venesection 20 ounces of blood; lumbarpuncture 20 c.c. cerebro spinal fluid withdrawn, and repeated injections of adrenalin.

A full post-mortem was not allowed by the relatives; consent was given to remove the brain only; which presented the following appearance: "The surface veins were intensely congested and the brain substance was softer than usual. There were extensive areas of haemorrhagic softening in both occipital lobes, left parietal and temporal lobes".

Following is the histological report received from the Government Laboratories: "section of brain shows following lesions microscopically. Numerous small haemorrhages into the brain substance. (2) Hyaline thrombosis both completely and partially obstructing various large vessels and denoting damage of the vessel endothelium. (3) Large areas of haemorrhagic softening and necrosis of brain tissue". This case is remarkable for the fact that patient lived such a length of time from 31st October, 1926, when he first became unconscious=10 days.

Balanitis Gangrenosa.

Two cases received treatment during the year; both are of interest on account of the intense severity and the coincidence that they come from the same village.

Case No. 1 (No. 9,381) Male Tamil, aged 24 years, admitted in the venereal disease wards, District Hospital, Kuala Lumpur, on 16th October, 1926, patient denied all history of having had sexual connection. On admission he presented the following: The glans and body of penis with exception of ½ an inch at root consisted of a gangrenous mass from which was oozing a very foul smelling discharge of characteristic odour; the glans, prepuce and body of penis completely disorganised; urine was passed through a small opening corresponding to the level of the sulcus; patient's general condition very poor—wasted and somewhat emaciated on account of septic absorption. Duration of condition before admission: about 25 days, according to patient's statement.

Treatment was instituted at once—as much of the gangrenous portion as possible removed; three hourly dressings with hot saline, hydrogen peroxide, and dusting with bismuth formic iodide being carried out for the first few days; soon a considerable change in the local condition was noticed. This treatment was carried out at more extended intervals. On 30th October, 1926, the portion of penis remaining presented a clean and healing surface; patient soon after leaving hospital.

Case No. 2 (No. 10,508) Male Siamese, aged 56 years, admitted on 19th November, 1926, in venereal diseases wards, District Hospital, Kuala Lumpur. Patient denied all history of having had sexual connection. On admission he presented the following: Penis much swollen; complete phimosis; portion behind level of the sulcus sloughing; an inflammatory circular patch on skin of prepuce corresponding to the level of the sulcus, a profuse thin yellowish discharge issuing from mouth of prepuce having a most offensive and characteristic odour; skin of scrotum which is in conjunction with the undersurface of penis consisting of a large slough. Treatment started at once—prepuce slit open; as much of slough as possible removed: dressing with hydrogen peroxide; hot saline, and dusting with bismuth formic iodide being carried out two hourly for the first few days; this soon caused a considerable change; on 23rd November, 1926, condition much improved; dressing done only 4 times a day. He steadily improved and left hospital at the beginning of 1927. According to his statement he had been ill for seven days before admission into hospital.

Cerebral Syphilis.

The following two cases are of interest—satisfactory results being obtained by energetic treatment, in case No. 2 a negative blood Wassermann did not exclude syphilis.

Case No. 1. Male Chinese, aged 30 years, admitted in venereal disease wards, District Hospital, Kuala Lumpur, on 21st October, 1926. Patient unable to walk for the last 12 days; speech stuttering and indistinct; knee jerks—right: absent; left: slightly exaggerated; pupils reacting to light and accommodation; heart, lungs, spleen and liver—nil of note; complained of intense headache and pain in the neck, head retracted, throat deeply congested.

Wassermann blood, positive. Wassermann cerebro spinal fluid, positive. Treatment: stabilarsan 0.3 gm.—five injections every third day followed by 0.45 gm. once a week=ten injections in all. Bismostab: 10 weekly injections of 1 c.c.

Potassium iodide: starting with 10 grains 3 times a day, gradually increasing dose until a maximum of 30 grains 3 times a day for one week, followed by gradual reduction to 10 grains 3 times a day. Seven days from the commencement of treatment patient was able to speak clearly; pain in neck and headaches ceased; in 17 days' time he was able to walk.

Blood examination: Wassermann test (11th January) done three weeks after last injection was found to be negative.

Cerebro spinal fluid: Wassermann test (18th January) done four weeks after last injection was found to be negative.

Case No. 2.—Male Tamil, admitted in venereal disease wards, District Hospital, Kuala Lumpur, on 13th November, 1926, suffering from hemiplegia left side, pupils react to light and accommodation; knee jerks: absent; Wassermann blood: negative.

Wassermann cerebro spinal fluid positive.

Treatment: Stabilarsan five injections of 0.3 gm. at 3 days' interval followed by five injections of 0.45 gm. at weekly intervals.

Potassium iodide: increasing doses as in case No. 1.

Twelve days from the commencement of treatment patient was able to walk, his condition rapidily improved; he absconded on 21st December, 1926, five and a half weeks from the date of admission.

Arsenical Dermatitis.

During the year 1926 thirteen cases of arsenical demartitis received treatment in the venereal disease wards, District Hospital, Kuala Lumpur.

All recovered with the exception of case No. 6 who was admitted with exfoliative stage well developed. Patient gave a history of having received four intravenous injections (does not know the name of the drug used) during the time he was a patient in one of the Singapore hospitals. Seven days after receiving the injections, he states, he developed a skin rash. He left the hospital of his own accord and came to Kuala Lumpur seeking admission into the venereal disease wards of the District Hospital, on 28th July, 1926.

All the thirteen cases are set down concisely in tabular form. *See* table "A".

During the second half year reports on all cases suffering from dermatitis following the administration of one of the arsenical preparations, have been received from the varicus hospitals in the Federated Malay States—*see* table "B".

TABLE "A."

ARSENICAL DERMATITIS CASES TREATED IN DISTRICT HOSPITAL, KUALA LUMPUR, DURING 1926.

Case.	Date of admission.	Nationality.	Sex.	Drugs.	No. of injections.	Total amount.	Appearance of first symptom after last injection.	Condition of skin.	Treatment and total amount.	Duration of skin condition.	Result.
1	15th Jan., 1926 ..	Malay ...	M.	Novarsenobillon Bismostab ...	1 1	0.45 gms. .1 gm.	5 days ...	Generalised erythema	Thiostab 3.15 gms.	12 days ...	Discharged 27th January, 1926
2	12th March, 1926	Tamil ...	M.	Stabilarsan ... Bismostab ...	10 10	4.5 gms. 1.0 gm.	4 days ...	Keratosis of palms of hands and soles of feet ...	Thiostab 3.6 gms.	13 days ...	Discharged 25th March, 1926
3	4th Feb., 1926...	„ ...	F.	Novarsenobillon Bismostab ...	5 5	1.5 gms. .5 gms.	2 days ...	Pruritis followed by a generalised erythema ...	Thiostab 2.5 gms.	9 days ...	Discharged 13th February, 1926
4	10th June, 1926	„ ...	F.	Stabilarsan ... Bismostab ...	8 8	2.4 gms. .8 gms.	Unknown ...	Admitted in exfoliative stage well developed ...	Thiostab 4.05 gms.	20 days ...	Discharged 1st July, 1926
5	17th March, 1926	„ ...	M.	Novarsenobillon Bismostab ...	5 5	2.25 gms. .5 gms.	7 days ...	Generalised erythema	Thiostab 4.05 gms.	13 days ...	Discharged 30th March, 1926
6	28th July, 1926...	„ ...	M.	? ...	4	Unknown	7 days ...	Admitted suffering from a generalised exfoliative dermatitis principally affecting face, chest, lower portion of abdomen. Axilla and elbow joints fissured. Conjunctivitis present, lips ulcerated, mucous membrane of mouth sore and painful. On 12th August, 1926, much improved, on 17th August, 1926, he took a turn for the worse, dying on 28th August, 1926. Post-mortem and histological reports given below *	Thiostab 4.5 gms.	24 days ...	Died on 20th August, 1926
7	3rd August, 1926	Sikh ...	M.	Stabilarsan ... Bismostab ...	2 2	0.9 gms. .2 gms.	15 days ...	Pruritis followed by a generalised erythema. Face swollen, slight exfoliation	Thiostab 3.15 gms.	13 days ...	Discharged 16th August, 1926

* Case No. 6: Post-mortem notes: Both kidneys—capsules strip with little difficulty exposing irregular flat projections. The surface veins are stellate and congested. Cortex—distinction between cortex and medulla not well marked. Liver—congested nearing a nutmeg condition. Spleen—enlarged to thrice normal size. Lungs—normal except slight congestion at base—right side. Stomach—congested. Intestines—normal. Skin—increase of epidermic scales with multiple dermal abscesses. Umbilicus ?—small abscess just above umbilical region exuding thick pus when cut into.

Histological report received from Government Laboratories: Cells of the surface layer of the epithelium give the appearance of increased activity. Stratum lucidum thickened with increased production of keratin. There are thromboses in various stages of many of the blood vessels of the corium. In addition there is one large well-defined abscess at the junction between the corium and the subcutaneous fat. Heart: Multiple minute thromboses of vessels with round celled infiltration, especially marked towards the pericardial surface. Liver: Capillaries between the columns of liver cells dilated. There is fatty degeneration with vacuolation of liver cells at the centre of various lobules. Spleen: Congested with presence of occasional thromboses of vessels. Kidney: Acutely congested. In addition there are numerous capillary thromboses surrounded by round celled infiltration of varying degrees. In some situations there is commencing abscess formation. Microscopically the appearances of the kidney lesions have a close resemblance to the changes occurring following minute septic infarctions.

TABLE "A"—(*cont.*).

ARSENICAL DERMATITIS CASES TREATED IN DISTRICT HOSPITAL, KUALA LUMPUR, DURING 1926—(*cont.*).

Case.	Date of admission.	Nationality.	Sex.	Drugs.	No. of injections.	Total amount.	Appearance of first symptom after last injection.	Condition of skin.	Treatment and total amount.	Duration of skin condition.	Result.
8	31st Aug., 1926	Japanese ...	F.	Stabilarsan ... Bismostab ...	10 10	3.0 gms. 1.0 gm.	3 days ...	Generalised erythema followed by slight exfoliation. Scalp later on covered with pustules, face much swollen	Thiostab 2.25 gms.	35 days ...	Discharged 5th October, 1926
9	4th Sept., 1926	Eurasian ...	M.	Stabilarsan ... Bismostab ...	1 1	0.45 gms. 0.1 gm.	4 days ...	Pruritis followed by a generalised erythema ...	Thiostab 1.8 gms.	4 days ...	Discharged 8th Sept., 1926
10	13th Oct., 1926...	Tamil ...	M.	Novarsenobillon Stabilarsan ... Bismostab ...	5 3 8	1.5 gms. 0.9 gms. 0.8 gms.	7 days ...	„ „ „ ...	Thiostab 3.15 gms.	10 days ...	Discharged 23th October, 1926
11	13th Nov., 1926	„ ...	M.	Novarsenobillon Bismostab ...	8 8	2.4 gms. 0.8 gms.	10 days ...	5th November, 1926, patient developed jaundice. Ametox intravenous 0.45 gms. for four days and then on alternate days. *N.B.*—After six injections of ametox dermatitis appeared. 5th November, 1926, blood examined for Van den Bergh's test. Report from Government Laboratory as follows: Van den Bergh's reaction is biphasic and indicates the presence of azobilirubin and bilirubin in the blood stream. This may be taken to indicate that the jaundice is of both toxic and obstructive type	Ametox 3.15 gms.	48 days ...	Discharged 31st Dec., 1926
12	6th Dec., 1926...	„ ...	M.	Stabilarsan ... Novarsenobillon Bismostab ...	3 1 4	1.35 gms. 0.45 gms. .4 gms.	2 days ...	On 6th December, 1926, generalised erythema, on 11th face swollen, œdema of feet, on 12th exfoliation on chest, ulceration of lips and conjunctivitis. These symptoms remain in severity. On 3rd December, 1926, patient's condition same	Ametox 2.25 gms.	Still in hospital	
13	19th Dec., 1926	„ ...	M.	Stabilarsan ... Novarsenobillon Bismostab ...	1 1 1	0.45 gms. 0.3 gms. .2 gms.	4 days ...	19th December, 1926, patient developed pruritis followed by erythema on his back, chest, arms and legs. On 30th December, 1926, exfoliation appeared which rapidly became generalised. Patient complains of pain when swallowing	Ametox 0.9 gms.	Still in hospital	

Ametox (May and Baker) and Thiostab (Boots) were administered according to the method advocated by Dr. Andrew Balfour, the Director of the London School of Hygeine and Tropical Medicine.

TABLE "B."

ARSENICAL DERMATITIS: TREATED IN OTHER THAN DISTRICT HOSPITAL, KUALA LUMPUR, 1926.

Case.	Date of admission.	Nationality.	Sex.	Drugs.	No. of injections.	Total amount.	Appearance of first symptom after last injection.	Condition of skin.	Treatment and total amount.	Duration of skin condition.	Result.
1	7th August, 1926 (Ipoh)	Chinese ...	M.	Stabilarsan ...	8	3.65 gms.	10 days ...	Erythema, swelling of face. On 21st exfoliation—multiple abscesses	Sodium Thiosulphate 1.5 gms.	21 days ...	Skin dry on 28th August, 1926
2	28th July, 1926 (Kajang)	Tamil ...	M.	Novarsenobillon	4	1.8 gms.	3 days ...	Generalised erythema, in five days' time generalised exfoliation	Thiostab 3.6 gms.	22 days ...	Skin clear on 19th August, 1926, developed broncho-pneumonia, died on 24th August, 1926
3	„	„ ...	M	„	6	2.7 gms.	31 days ...	Generalised erythema, exfoliation in seven days' time	Thiostab 3.6 gms.	„ ..	Skin clear on 19th Aug., 1926, died on 24th Aug., 1926, of dysentery
4	9th August, 1926 (T. Malim)	Chinese ...	M.	„	2	0.9 gms.	5 days ...	Generalised erythema, in two days' time exfoliation stage appeared	Ametox no record	No record	No record
5	30th August, 1926 (Tapah)	Singhalese	M.	Novarsenobillon Stabilarsan ...	3 2	1.35 gms. 0.6 gms.	3 days ...	Generalised erythema, exfoliation in four days' time	Ametox 2.7 gms.	„	Improved
6	9th August, 1926	Other Indian	M.	Novarsenobillon Stabilarsan ...	4 1	2.25 gms.	4 days ...	Generalised erythema, exfoliation in seven days' time	Sodium Thiosulphate 6.9 gms.	„	„
7	17th Sept., 1926 (Ranb)	Chinese ...	M.	Sulfarsenol ... Novarsenobillon	1 4	6 etgs. 1.8 gms.	1 day ...	After every injection urticaria	No record ...	—	No record
8	11th Sept., 1926 (Taiping)	Tamil ...	M.	Novarsenobillon	8	No record	40 days ...	Generalised erythema, exfoliation in seven days' time	Contramine...	—	„
9	14th Sept., 1926 (Gen. Hospital) K. Kangsar	Malay ...	F.	Novarsenobenzol Liq. Arsenicalis by mouth	1	0.45 gms. 195 min.	7 days ...	Erythematous rash on trunk, limbs and face. In three days' time exfoliation appeared	Nil. Liq. arsenicalis stopped	2 days ...	Condition cleared
10	26th Oct., 1926 (K. Kangsar)	„ ...	M.	Stabilarsan ...	1	0.6 gms.	2 days ...	Pruritis and generalised erythema	Nil	No record	No record
11	No record (Telok Anson)	Chinese ...	M.	„ ...	3	1.05 gms.	2 days ...	Keratosis of palms of hands and soles of feet ...	Ametox 0.3 gm.	„	„
12	3rd Dec., 1926 (Sultan Street) Kuala Lumpur	„ ...	F.	„ ...	2	0.6 gms.	3 days ...	Pruritis and erythema—erythema on abdomen, chest and back of neck	Thiostab 0.6 gm.	3 days ...	Skin clear on 6th Dec., 1926

MAP OF
FEDERATED MALAY STATES
SHOWING
VENEREAL DISEASES
TREATMENT CENTRES

GULF OF SIAM

SENGGORA OR SUNG KRA

OOTAPAU JUNCTION
HAAD YAI JUNCTION

K Sokong
Tanjong Pateni
K. Patani
Tepan
Klong Sai
Yala
K. Telubin
Tanjong Mas
K. Golok
K. Kelantan
Kg Nara

PERLIS
Padang Besar 98¼
Kubang Tiga Hatt 90¾
Bt. Ketri 86½
Mata Ayer 82¾
Reu 80
Kodiang 78¼
Tunjang 67½
Anak Bukit 61
ALOR STAR 58¼
Tokai 49½
Kobah 45¼

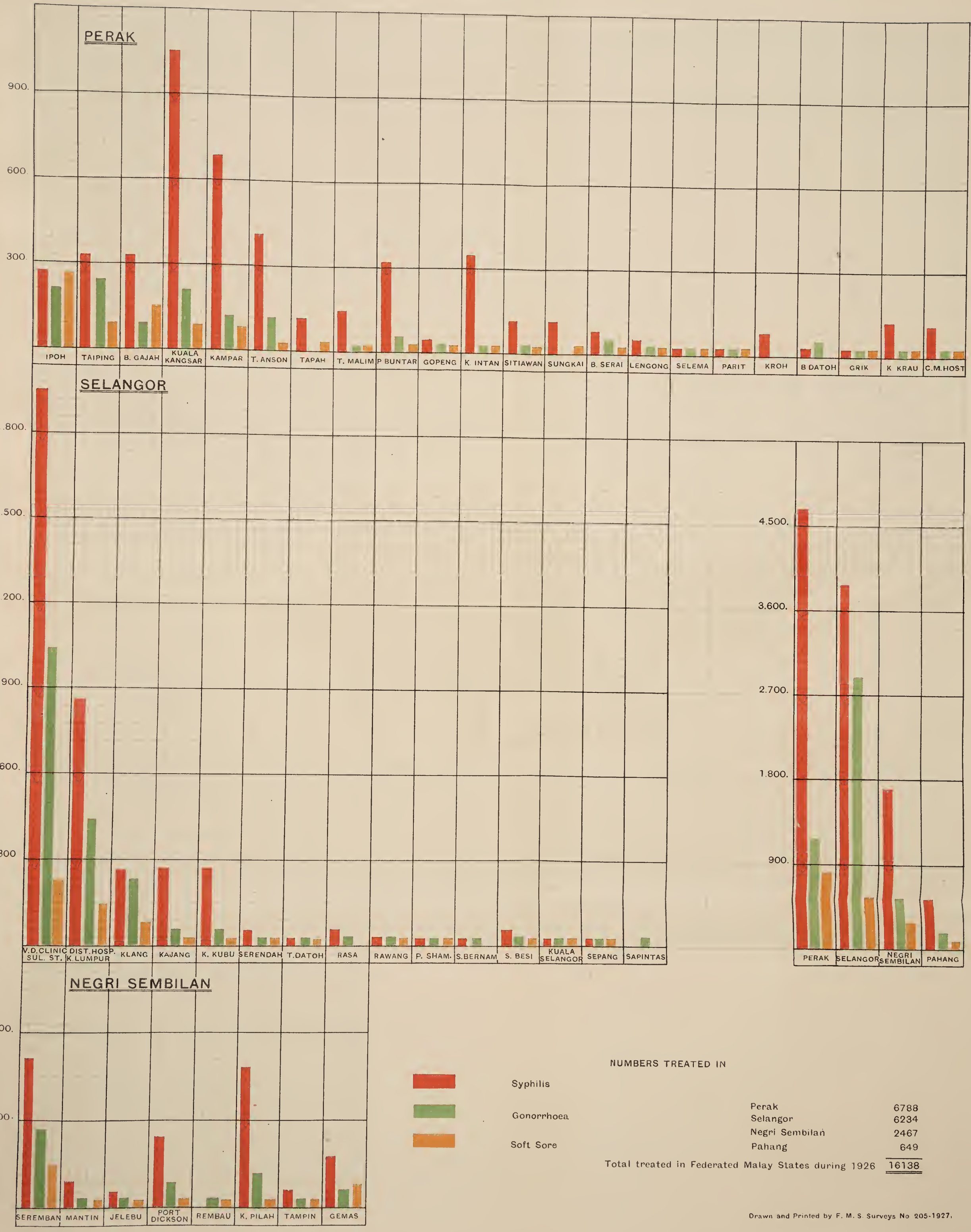
KEDAH
Junun 39¾
Gua Chempedak 36½
Gurun 34
Sungei Tok Pawang 29¼
Bedong 27¼
Marbau Hatt 25½
Sungei Lallang 23¾
Sungei Patani 21
Penang Tunggal 18
Tassak Glugor 9½
Jerak 7
Penanti 4
Bt. Mertajam 6½
Alma 8½
Simpang Ampat 12
S. Bakap 16½
Nibong Tebal 20½
PARIT BUNTAR 23¼
Simpang Lima 25¼
Alor Pongsu 38¼
S. Bogak 29
Bagan Serai 31½
Bt. Merah 40½
Pondok Tanjong 47
Ulu Sapetang 50½
Krian Road 52½
Kemunting 58
TAIPING 59
Enggor 83½
Ayer Kunus N. 82½
Bt. Berapit 78
K. KANGSAR 78
Padang Rengas 71¾
Lawin 75¼
Salak N. 86¾
S. Siput 91½
Rimbau Panjang 94
Chemor 99¼
Tasek 108
IPOH 112½
Lahat 116½
GOPENG
BATU GAJAH 121¼
Bakap 124¼
Kota Bharu 127
Malim Nawar 131½
KAMPAR 135½
CHENDERIANG
Temoh 140½
Banir 142½
TAPAH RD. 146
S. Merbau 148¼
Bidor 152½
Bikam 157¼
Sungkai 180
Trolak 169¾
Slim River 175
Behrang 182
Kelawei Halt 185
Tg. Malim 188½
Kalumpang 192
Kerling 197½
KUALA KUBU ROAD 200½
KUALA KUBU 203½
Rasa 208¾
Batang Kali 208½
Ulu Yam 210
S. Tampeian 214¼
SERENDAH 217½
S. Choh 219¾
RAWANG 222½
SELANGOR
Sasaran 22½
Suara 25½
K. LUMPUR 242½
Ampang 3¾
S. Besi 250½
Serdang 252¾
KAJANG 258¾
KLANG 21½
PORT SWETTENHAM 27
PULAU KLANG
Bangi 265½
Batang Benar 270½
Sepang Rd. & Nilai 274½
Tiroi 280¾
Labu 279
SEREMBAN 287¼
S. Gadut 293¼
Perhentian Tinggi 295¾
Pedas 299¼
Rembau 302½
Sirau 13½
Chengkau 305½
Sirusa 18¼
PORT DICKSON 24¾
Bagan Pinang 21¾
Taboh Naning 314
Gadek 4½
Alor Gajah 7½
Belimbing 11
MALACCA
Jasin
Durian Tunggal 14½
Batu Berendam 17½
Tanjong Kling 21½
MALACCA TOWN
PULAU PANGKOR
Stiawan
K. Parak
TELUK ANSON 16½
K. Bernam
Sabak
S. Nipah
Tanjong Karang
K. Tinggi
K. Selangor 29½
Teluk Piai 28½
Aasam Jawa 25
K. Jugra
Morib
Batu
K. Sepang
K. Linggi
K. Keaang
K. Muar
Bandar Maharani
Parit Java
Tanjong Tohor
K. Batu Pahat
Sungei Golok 13
To' Uban 20¾
S. Kelad 24½
Bukit Panau 26
Tanah Merah 32
Sungei Kusial 38¼
Belukar Panjang Halt 37¾
Temangan 40
S. Nal 48¼
Kral 52¾
Gris
Pahi
Manek Urai
K. Pergau
Kemubu
Limau Kasturi
Merapoh
S. Tahan 7186 Ft.
Chegar Perah 164½
Naram Tunggal Halt 158½
Bukit Kota 153½
Telang Halt 149¾
Bukit Betong Halt 151½
Padang Tungku 147
KUALA LIPIS
Bohta
Mela 121¼
Khambit 127¼
Tembeling 118
Padang Piol 114¾
Jerantut 108¾
Jerangsong 103½
Kg. Tawar
Gali
Raub
Tras
PAHANG
K. Krau 92¾
Tekal 87¼
Pasir Mandi
Kardau 83½
Bintang
Semantan
Mentakab 78½
TEMERLOH
Mangkarak 62½
Mentri 59½
Triang 56½
K. Trang
K. Bara
Kemayan 47½
Ayer Kring 42¼
NEGRI SEMBILAN
K. KLAWANG
Ayer Hitam 33¼
Jempol 31½
Bahau 23½
Jongkat Halt 20½
Rompin 13½
Londah Halt 6
GEMAS 351¼
Batu Anam 357¼
Buloh Kasap 362
Segamat 366¾
Gemuang 372
Tenang 377½
Labis 385¼
Bekok 395¼
Paloh 404
Niyor 413¼
Kluang 417¾
Mengkibol 422¼
Renggam 430½
Layang Layang 437¾
Sedenak 446
Kulai 452¼
Senai 457½
Kempas Hatt 464½
Tampoi 467¼
JOHORE BAHRU 472
Woodlands 473½
Mandai 477½
Bt Panjang 478
Bt. Timah 482½
Clonty 485
Newton 487
TANK ROAD DR
SINGAPORE 488¼
Tanjong Pagar 490¼
Paser Panjang 493¼
JOHORE
K. Johore
Rumenia P
Tanjong Satajam
PULAU KUKUB
Tanjong Piai
Sedili Besar
K. Sedili
Tanjong Labuan
K. Kreteh
Tanjong Penunjok
K. Kemaman
Tanjong Gelang
K. Kuantan
Bintang
Pulai
PEKAN
K. Pahang
K. Lepar
K. Kui
K. Trengganu
K. Marang
TRENGGANU
Tanjong Dungun
K. Dungun
PULAU TENGGOL
K. Paka
K. Endau
Tanjong Selantai
PULAU TIOMAN
PULAU TINGGI
PERHENTIAN ISLANDS
K. Semarak
K. Basut
GREAT REDANG
LITTLE REDANG
K. Situ
CHINA SEA
STRAITS OF MALACCA
SUMATRA
PULAU BENGKALIS
PULAU RANGSAN
GREAT KERIMUN
PULAU BATAM
PULAU BINTANG

REFERENCE

- Main Treatment Centres
- Proposed Main Treatment Centres
- Sub-Treatment Centres.
- Federated Malay States Coloured Green
- Railways

F. M. S. Surveys No. 205 - 1927

CHART SHOWING VENEREAL DISEASES TREATED IN HOSPITALS AND DISPENSARIES OF THE FEDERATED MALAY STATES DURING THE YEAR 1926.



Syphilis

Gonorrhoea

Soft Sore

NUMBERS TREATED IN

Perak	6788
Selangor	6234
Negri Sembilan	2467
Pahang	649
Total treated in Federated Malay States during 1926	16138

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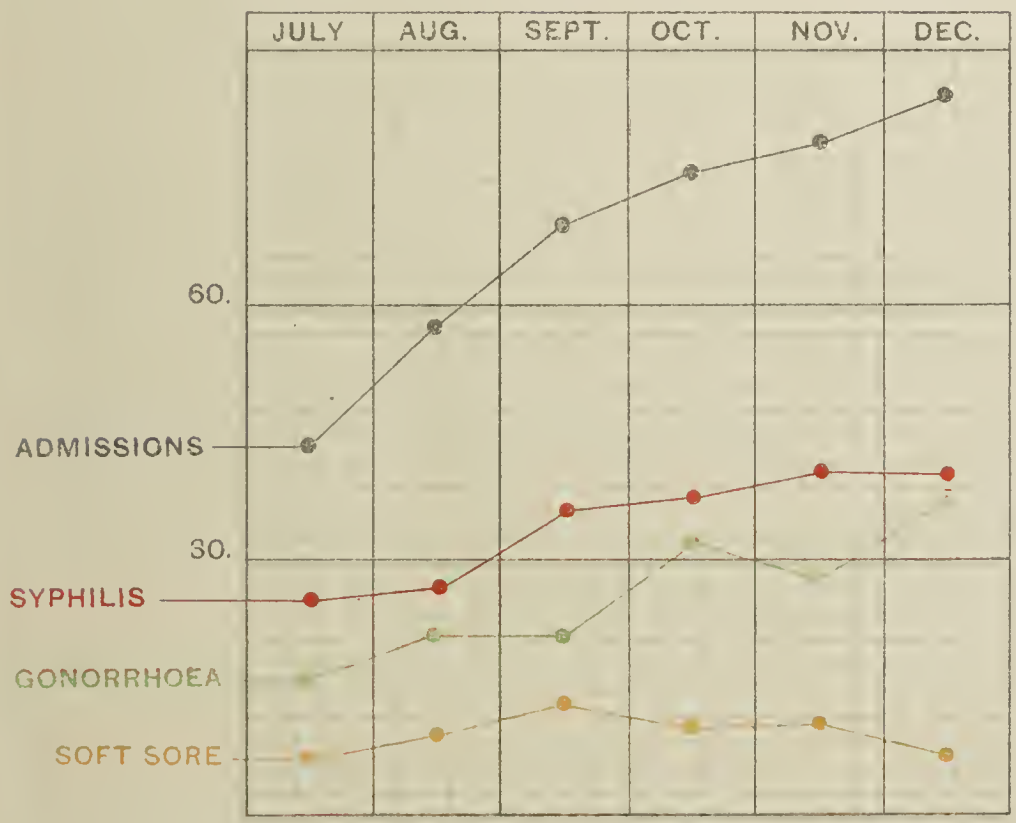
Graph No. 1

KLANG.

GRAPH SHOWING ADMISSIONS AND DISEASES.

1926.



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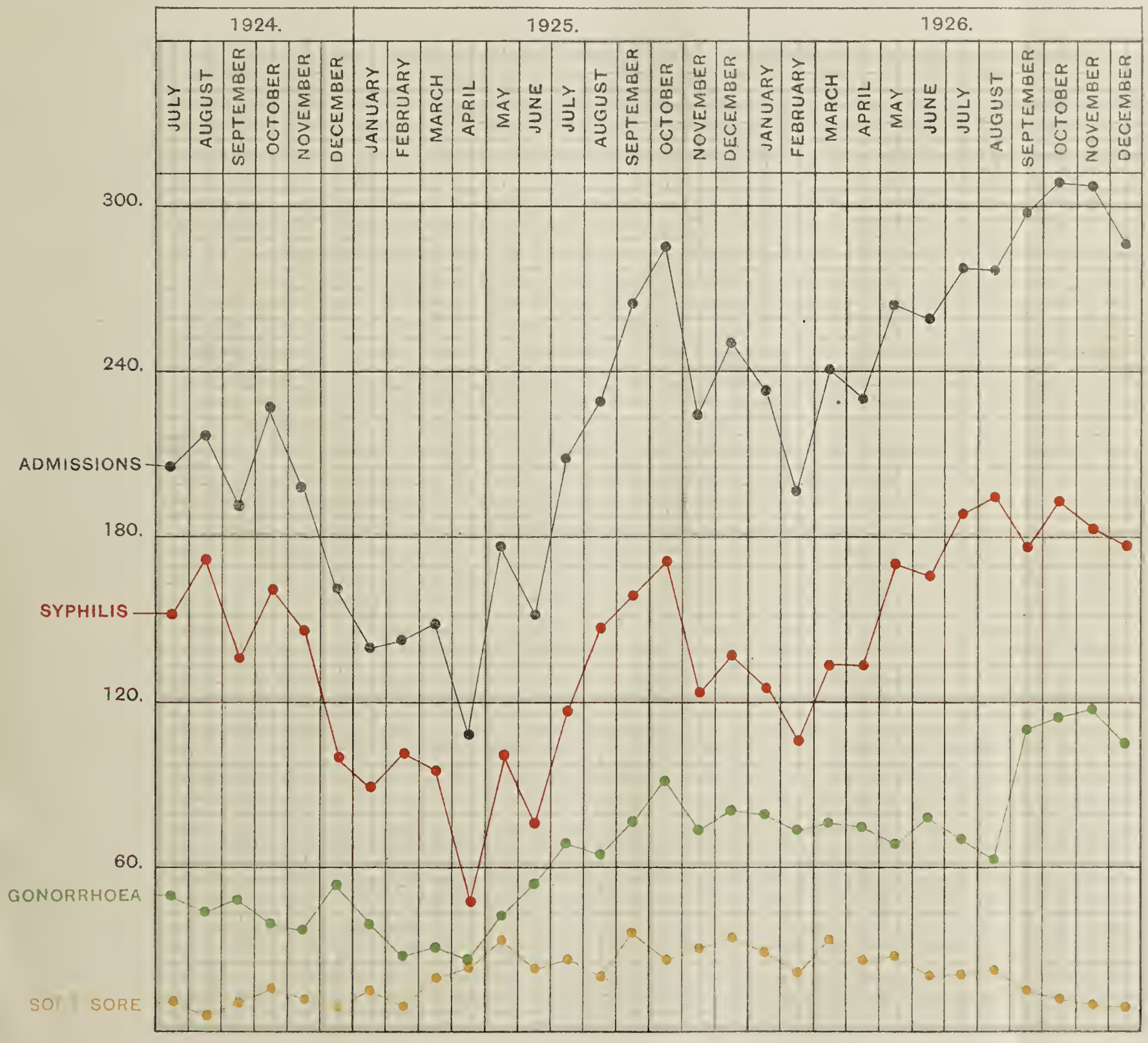
Graph No. 2

SULTAN STREET VENEREAL DISEASES TREATMENT CENTRE
KUALA LUMPUR.
GRAPH SHOWING ADMISSIONS AND DISEASES FROM JULY 1924 DATE ON WHICH THIS CLINIC WAS STARTED, TO THE END OF 1926.



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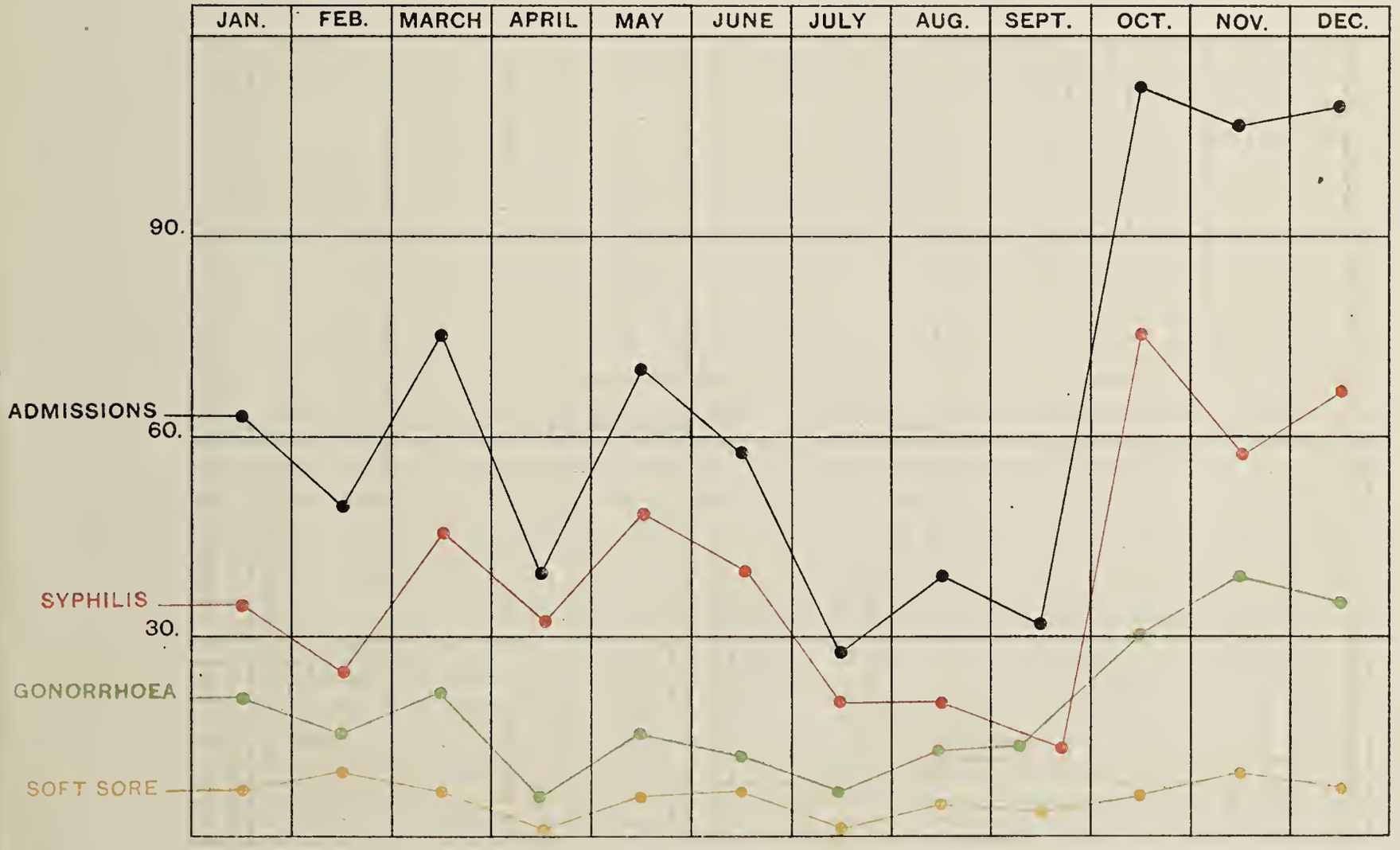
Graph No. 3

SEREMBAN.

GRAPH SHOWING ADMISSIONS AND DISEASES.

1926.



THIS CLINIC WAS TRANSFERED FROM THE GENERAL HOSPITAL TO THE GOVERNMENT TOWN DISPENSARY AT THE BEGINNING OF OCTOBER.

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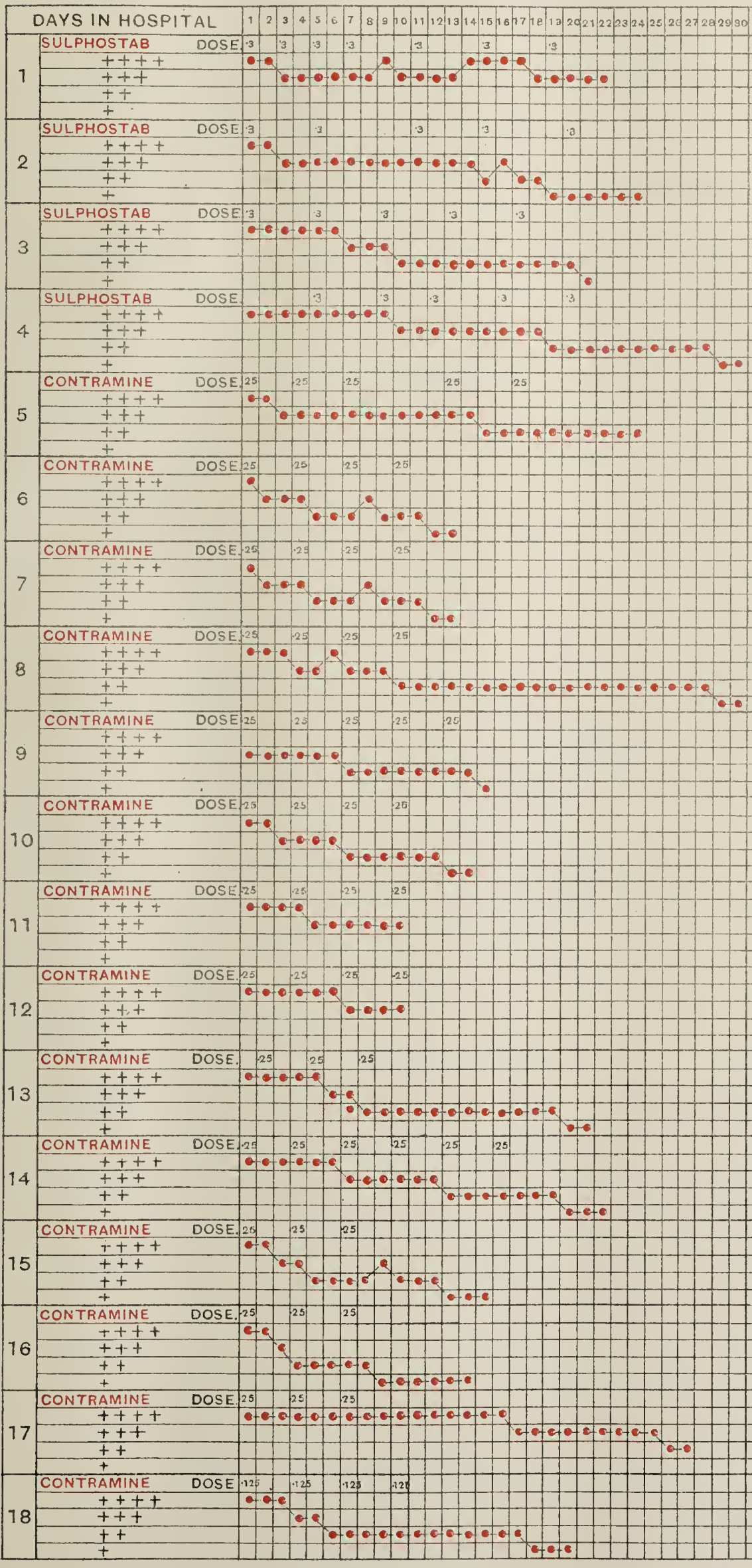
Graph No. 4

DISTRICT HOSPITAL KUALA LUMPUR 1926

CHART SHOWING 18 CASES TREATED FOR GONORRHOEAL RHEUMATISM. THE FIRST 4 CASES WERE TREATED WITH SULPHOSTAB 'BOOTS' AND THE REMAINING WITH CONTRAMINE



1	NATIONALITY	CHINESE.
	DATE ADMITTED	12. 10. 26.
	RESULT	IMPROVED
2	NATIONALITY	CHINESE.
	DATE ADMITTED	18. 10. 26.
	RESULT	CURED
3	NATIONALITY	TAMIL.
	DATE ADMITTED	29. 10. 26.
	RESULT	CURED.
4	NATIONALITY	MALAY.
	DATE ADMITTED	15. 10. 26.
	RESULT	CURED.
5	NATIONALITY	TAMIL.
	DATE ADMITTED	19. 10. 26.
	RESULT	SLIGHT IMPROVEMENT
6	NATIONALITY	TAMIL.
	DATE ADMITTED	7. 11. 26.
	RESULT	CURED.
7	NATIONALITY	TAMIL.
	DATE ADMITTED	8. 11. 26.
	RESULT	CURED
8	NATIONALITY	TAMIL.
	DATE ADMITTED	8. 11. 26.
	RESULT	CURED.
9	NATIONALITY	TAMIL.
	DATE ADMITTED	14. 12. 26.
	RESULT	CURED.
10	NATIONALITY	TAMIL.
	DATE ADMITTED	18. 12. 26.
	RESULT	CURED.
11	NATIONALITY	CHINESE.
	DATE ADMITTED	24. 12. 26.
	RESULT	STILL IN HOSPITAL
12	NATIONALITY	CHINESE.
	DATE ADMITTED	24. 12. 26.
	RESULT	STILL IN HOSPITAL
13	NATIONALITY	CHINESE.
	DATE ADMITTED	29. 9. 26.
	RESULT	CURED.
14	NATIONALITY	CHINESE.
	DATE ADMITTED	7. 10. 26.
	RESULT	CURED.
15	NATIONALITY	TAMIL.
	DATE ADMITTED	10. 7. 26.
	RESULT	CURED.
16	NATIONALITY	MALAY.
	DATE ADMITTED	6. 7. 26.
	RESULT	CURED.
17	NATIONALITY	CHINESE.
	DATE ADMITTED	21. 8. 26
	RESULT	ABSCONDED
18	NATIONALITY	TAMIL.
	DATE ADMITTED	29. 9. 26.
	RESULT	CURED.

++++ = VERY ACUTE
+++ = ACUTE
++ = SUB-ACUTE
+ = NO SYMPTOMS

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ANNUAL REPORT OF THE OPHTHALMIC OF THE IPOH EYE-CLINIC, FOR THE YEAR 1926.

GENERAL REMARKS.

There has been a steady increase in the daily number of attendances at the Eye-clinic, Ipoh. The number of new cases in 1926 was 3,470, and the total number reached 10,367. The number of inpatients was 491. Only serious cases and those requiring operation were admitted.

The following figures indicate the growth of this department during the past four years:

Year.	New cases. out-patients.	in-patients.	Total treated.
1923	1,535	234	9,011
1924	1,780	391	6,373
1925	2,151	386	7,141
1926	3,470	491	10,367

It will be noted that the number of out-patients (new cases) has been almost trebled, and an increasing amount of work in the out-patients' department has of necessity developed.

IN-DOOR.

Diseases.—	Admissions.
Conjunctivitis	111
Gon. ophthalmia	37
Pterygium	12
Lids	9
Trachoma	48
Ulcer cornea	64
Keratitis	22
Iritis	31
Cataract	67
Retinitis	6
Glaucoma	12
Lachry. app.	10
Injuries.—	
Lids	3
Cornea	16
Iris	2
Lens	3
Eyeball	5
Refraction.—	
Hyperopia	1
General.	
Sixth nerve paralysis	4
Facial paralysis	1
Keratomalacia	3
Facial erysepilas	1
Herpes frontalis	2
Disorganised eyes.—	
One	17
Both	4
Total	491

Nationality.—	
Chinese	314
Indians	134
Malays	42
Eurasians	1
Total	491

Sex.—

	Admissions.
Males	391
Females	100
Total	491

MAJOR.

Operations.—

Extraction of cataract	63
Iredectomy	29
Iridotomy	11
Trephining	13
Enucleation of eyeball	2
Plastic operation of entropion	1
Dissection of lachrymal sac	1
Extraction of lens (dislocated)	2
Total	122

MINOR.

Needling	26
Dissection of pterygium	12
Paracentesis	10
Dilatation of canaliculus	36
Incision lachrymal abscess	2
Tatooing	2
Incision abscess lid	2
Expression of lid for trachoma	50
Excision of growth lid	1
Removal of foreign body cornea	37
Snipping off prolapsed iris	3
Total	181
Sub-conjunctivitis injections	5

Result of Cataract Operations.—

Good result	55
Optic neuritis	3
Iritis	4
Panophthalmitis	1
Total	63

OUT-DOOR.

Diseases.	New cases.	Repetitions.	Total.
Conjunctivitis	1,892	3,191	5,083
Gon. ophthalmia	29	42	71
Pterygium	36	29	65
Lids	97	126	223
Trachoma	345	2,051	2,396
Ulcer Cornea	153	507	660
Keratitis	116	396	512
Iritis	51	172	223
Cataract	129	32	161
Retinitis	32	13	45
Glaucoma	21	14	35
Oc. muscles	12	8	20
Lachry. app.	32	32	64
Carried forward	2,945	6,613	9,558

Diseases.	New cases.	Repetitions.	Total.
Brought forward ...	2,945 ...	6,613 ...	9,558
Injury.—			
Lids	17 ...	12 ...	29
Conjunctiva	19 ...	34 ...	53
Cornea	64 ...	81 ...	145
Iris	4 ...	3 ...	7
Lens	4 ...	3 ...	7
Eyeball	9 ...	1 ...	10
Refraction.—			
Myop. astigmatism	27 ...	— ...	27
Myopia	71 ...	19 ...	90
Hyp. astigmatism	15 ...	— ...	15
Hyperopia	21 ...	— ...	21
Asthenopia	59 ...	2 ...	61
Night blindness	4 ...	— ...	4
Amblyopia	1 ...	— ...	1
Diplopia	2 ...	— ...	2
Presbyopia	93 ...	— ...	93
General.—			
Sixth nerve paralysis	4 ...	1 ...	5
Third nerve paralysis	1 ...	— ...	1
Facial paralysis	11 ...	12 ...	23
Sec. anaemia	3 ...	— ...	3
Neuralgia	9 ...	— ...	9
Keratomalacia	2 ...	26 ...	28
Facial erysepelas	3 ...	— ...	3
Herpes frontalis	3 ...	29 ...	32
Jaundice	4 ...	— ...	4
Xerophthalmia	3 ...	— ...	3
Disorganised Eyes.—			
One	59 ...	60 ...	119
Both	13 ...	1 ...	14
Total ...	3,470 ...	6,897 ...	10,367
Nationality.—			
Chinese	2,470 ...	5,704 ...	8,174
Indians	642 ...	858 ...	1,500
Malays	201 ...	225 ...	426
Europeans	131 ...	7 ...	138
Eurasians	19 ...	59 ...	78
Japanese	7 ...	44 ...	51
Total ...	3,470 ...	6,897 ...	10,367
Sex.—			
Males	2,851 ...	5,019 ...	7,870
Females	619 ...	1,878 ...	2,497
Total ...	3,470 ...	6,897 ...	10,367

Chief Diseases.—From the above records it will be seen that amongst the chief diseases. Conjunctivitis holds the chief place. The main type was a koch-weeks bacillus infection. Some severe types were seen chiefly in rickshaw pullers, who live together in kongsis and pass the infection on from one to another.

There was no definite period during the year for its appearance.

The disease prevailed throughout the year.

Gonorrheal Ophthalmia.—Thirty-seven cases were admitted, ten were infants and 27 adults, eight were females and 29 males, three were Tamils and 34 Chinese.

Fifteen of the 37 had complications, i.e., corneal ulcers in one or both eyes; three had both eyes completely disorganised before admission and three had lost one eye.

Of the 22 uncomplicated cases 19 made excellent recoveries.

Of the infants one died of congenital syphilis during the treatment, but the results were uniformly better in this class of patient than in the adult.

The use of urine in the treatment of eye affections has been recorded in Ancient writings and it may be mentioned that an instance of its application was noted during the year. An old out-patient with trachoma was advised by his friends to use his own urine as an eye-wash. He did so and was admitted with Gon. ophthalmia. It was then discovered that he was suffering from gonorrhea.

Trachoma.—Three hundred and forty-five new cases were treated. All that can be said is that treatment keeps the disease in abeyance. Figures showing new arrivals from China with this disease are being compiled with a view to forwarding a report later on.

Injuries.—One hundred and seventeen cases of injury to the eye and its appendages were treated. The cornea provided 64 cases almost 50 per cent. Owing to the pain and loss of vision these cases seek advice, but unfortunately in most of them valuable time has been lost and infection had occurred.

Operations.—Three hundred and three operations were performed of which 122 were major eye operations and 181 minor. Sixty-three cataract extractions with 55 successes were the chief major operations. Three failures were due to chronic disease of the Vetina Khoroid, which could not have been forseen.

Conclusion.—As in former years, dresser Dias has been of great assistance to me. Nurses are encouraged to attend the out-patients and one is fixed for duty for a month at a time. This is a very good scheme, as practically all the nursing staff are now conversant with the methods of treatment of the more common type of eye disease. The same scheme has been extended to the dresser staff and it is to be hoped that the same satisfactory results will be attained.

P. H. HENNESSY,
Medical Officer and Ophthalmic Surgeon, F.M.S.

ANNUAL REPORT OF THE OPHTHALMIC CLINIC, GENERAL HOSPITAL, KUALA LUMPUR, FOR THE YEAR 1926.

Sir,—I have the honour to submit my annual report on the ophthalmic work in Kuala Lumpur for the year ending 31st December, 1926.

The number of patients treated were 2,962; of these 850 were in-patients and 2,112 were out-patients.

The figures according to nationalities were as follows:

Nationality.	In-patients.	Out-patients.
Chinese	351	457
Tamils	258	642
Malays	145	461
Sikhs	63	197
Indian Mohamedans	18	164
Eurasians	11	100
Europeans	Nil	65
Singhalese	3	18
Japanese	1	8
Total	850	2,112

The total number of attendances were 21,941. The total number treated shows an increase by 1,000 over the number treated last year—an increase of almost 60 per cent.

All nationalities now come to realise the benefits of the work. Patients come from Tanjong Malim on the north to Johore in the south and from Pahang, Negri Sembilan and Malacca.

The disease met with are shown on anatomical basis in the attached table.

But the most common diseases met with in their order of frequency are as follows:

1. Conjunctivitis.
2. Catarrhal ophthalmia (koch-week's and morax).
3. Trachoma.
4. Errors of refraction.
5. Ulcer of cornea.
6. Iritis.
7. Opacities of cornea.
8. Meibomiah and stye abscess.
9. Gonorrhoeal ophthalmia.
10. Glaucoma.
11. Cataract.

Conjunctivitis was met with among all races; trachoma among the Chinese and Northern Indians; gonorrhoeal ophthalmic among Chinese; of the errors of refraction, myopia was prevalent among the North Indians and Chinese and astigmatism among Europeans.

Retinoscopy and Refraction.—Many cases of errors of refraction were accidentally discovered in examining persons joining the Government service, all of whom have their vision tested at the clinic. This has done a great deal towards greater efficiency in the public services than has been the case hitherto.

Retinoscopy also helped to discover deep-seated troubles connected with the fundus and the refractive media and the uveal tract.

A fair number of optic neuritis and atrophy and choroiditis were met with.

A table showing the details is appended herewith.

Operations.—There were done in all 295 operations; of these 83 were major and 212 minor, a distinct increase on the number for 1925 which was 217.

In the performance of operations for removal of cataract (Senile) the irrigation method of the Elliot School was abandoned in many instances with distinct advantage in saving after complications which are not infrequent in the above method.

General.---During the year under review an epidemic of catarrhal ophthalmia was dealt with. As was the case in the 1924 Epidemic the infection was of the mixed koch-week's and morax axenfeld variety and responded quickly to treatment. It affected all nationalities.

It must be said in conclusion that the usefulness of the clinic is very largely appreciated by the public. The quality of the work has greatly improved and with the appliances and conveniences that are to be provided shortly, still greater improvement and efficiency may be expected. We may then have a better equipped and well ordered and organised section of curative and preventive medicine.

I have the honour to be,
Sir,
Your obedient servant,
(Sgd.) A. VISWALINGAM,
Deputy Medical Officer, Ophthalmic Clinic,
General Hospital, Kuala Lumpur.

19th January, 1927.

INCIDENCE OF DISEASES OTHER THAN THOSE SHOWN UNDER REFRACTION AND RETINOSCOPY.

Disease of:	
The Lids.—	
Sebaceous cyst.	7
Tarsal abscess	2
Blepharitis	38
Meibomain abscess	43
Entropion	21
Stye	70
Ptosis	8
Trichiasis	9
The conjunctiva.—	
Foreign body	34
Trachoma	162
Conjunctivitis	358
Pterygium	47
Catarrhal ophthalmia	274
Haemophilia	3
Phlyctenular conjunctivitis	43
Follicular conjunctivitis	25
Angular conjunctivitis	52
Traumatic conjunctivitis	25
Xerosis conjunctivitis	8
Pinguecula	7
Symblepharon	2
The Cornea.	
Ulcer	127
Keratitis	31
Kerato malacia	5
Leucoma adherens	44
Opacities	15
Nebula cornea	13
Macula cornea	47
Staphyloma	21
Abrasions	23
The Lens.—	
Cataract	72
The Iris.—	
Iritis—Irido cyclitis	53
Prolapse of Iris	17
Uveitis	4

The Eyeball.—	
Panophthalmitis	11
Phthisis bulbi	17
Contusion of eyeball	12
Glaucoma	26
Rupture of eyeball	14
Lachrymal System.—	
Dacryocystitis	4
The Sclera.—	
Episcleritis	2

RETINOSCOPY AND REFRACTION.

Refraction.—	
Emmetropia	603
Asthenopia	172
Astigmatism	48
Myopia	141
Hyperopia	18
Presbyopia	57
Aphakia	9
Toxic amblyopia	5
Squint	10
Funduscopic Examination.—	
Retinitis	17
Retino choroiditis	9
Optic neuritis	25
Optic atrophy	17
Dislocated lens	2
Neuro retinitis	19
Opacity lens	7
Choroiditis	4
Choroidal atrophy	3

OPHTHALMIC OPERATIONS.

MAJOR.

Radical operation for entropion (partial tarsectomy)	8
Transplantation of pterygium	7
Paracentasis of anterior chamber	2
Removal of foreign body from eyeball	5
Dissection of leucoma cornea	1
Ablation of staphyloma of cornea and iris	5
Optical iridectomy	3
Perepheral iridectomy for glaucoma	3
Trephining for glaucoma	4
Discission of cataract	5
Evisceration of eyeball	8
Enucleation	1
Operation for symblepharon	2
Removal of cataract-senile	29
Total	83

MINOR.

Removal of foreign body cornea	72
Removal of foreign body conjunct.	54
Stye abscess	49
Meibomain abscess	34
Tarsal abscess	2
Peritomy	1
Sebaceous cyst	2
Total	214

ANNUAL REPORT OF THE RADIOLOGIST FOR THE YEAR 1926.

The new X-ray and Electro Therapy Building on the hospital site in Circular Road was completed in the latter half of the year. Although this branch, which has been urgently needed, was asked for on my arrival, in the Federated Malay States in May 1924, and the plans, both for the building and the installation of equipment, were completed at the end of June of the same year, it was not able to take patients until September 20th, 1926.

The reasons for the delay of the building and of its shortcomings have already been dealt with. In the case of the equipment installation, this, although put in as soon as the building was ready—at the end of March 1926—could not be worked until the belated arrival of a motor generator, ordered from the Crown Agents at the end of 1925, but delayed until September by industrial conditions in England. This motor generator was, in my opinion, unnecessary, but had to be bought to comply with the Electricity Enactment.

Since the end of September the new apparatus, both X-ray and Therapeutic, has been working well, although bad material in some of the treatment equipment gave trouble at first, until repaired. All the apparatus, however, is prevented from giving its best by reason of the unsatisfactory electric current supply, which cannot be remedied until the new power station is finished.

The X-ray apparatus purchased in America appears to be well adapted to the climate and the locally built accessories have proved very satisfactory.

The old, war-worn X-ray set at the General Hospital—the only source of X-rays in the Federated Malay States for some years—which had only been kept in working order by constant care, finally broke down completely in August. As the still older apparatus installed at Ipoh burnt out after a few day's use, there were, unfortunately no X-ray facilities at all in the Federated Malay States for nearly a month.

The induction coil type of X-ray machine, being most unsuitable for the tropics, should never have been brought to this country. In the future, a standard type of apparatus, especially adapted to the climate, will be installed in the Federated Malay States Hospitals, so that uniformity of results and reaching facilities may be obtained.

During 1926, 714 X-ray cases were seen, and 209 Electrical treatments given, the latter since September in the new building.

A portable (ward) X-ray set was ordered for the European Hospital, capable of easy removal to other hospitals, but this has recently arrived badly smashed in transit.

With few exceptions, consignments from England have been broken, through careless packing, faulty, badly made or incomplete; have invariably been much delayed, and have often had little or no working or assembling instructions. These faults are rendered more glaring by the fact that all consignments from America have arrived perfectly packed, invariably complete and well made, and always with the fullest possible instructions.

On the treatment side, diathermy apparatus has proved very successful in both medical and surgical cases, and work done in conjunction with other specialists has proved its great value over a very wide field, and quite justifies the purchase of further equipment, which has been ordered.

A new X-ray installation has been put in at Ipoh in the District Hospital, and is working well. There, as in Kuala Lumpur, great delay was caused waiting for a motor generator, and also much accessory equipment had to be done without as the money had been spent on these motor generators. Additional funds have been asked for and the installation will shortly be completed.

As regards staff, an Assistant Surgeon has been attached to the branch in Kuala Lumpur for X-ray and Electrical training. In Ipoh Dr. Greenwood visits the hospital twice a week for the routine X-ray work, while the Radiologist goes to Ipoh at regular intervals for special cases and for any emergency.

(Sgd.) C. F. CONSTANT,
Radiologist, F.M.S.

ANNUAL REPORT OF THE MEDICAL OFFICER IN CHARGE, LEPER ASYLUM, KUALA LUMPUR.

SIR—I have the honour to submit the following report for the year 1926, concerning the Leper Asylum, Kuala Lumpur.

NUMBER OF LEPERS TREATED AND NUMBER OF DEATHS.

The total number of lepers treated was 704 with 42 deaths as compared with 635 with 31 deaths during 1925. A fair proportion of these deaths occurred among the elderly inmates some of whom had been within the asylum 15 years or more.

ADMISSIONS.

One hundred and seventy-one cases were admitted, consisting of two Eurasians, 139 Chinese, 29 Tamils and one Malay. A noticeable feature was the large proportion of early cases.

Of the 171 cases admitted, 97 had been diagnosed in some part of the Federated Malay States as suffering from leprosy and had been sent by the hospital which made the diagnosis. Seventy-four patients were self-diagnosed and voluntarily sought admission which was granted after confirmation of the diagnosis.

Of the 97 cases sent to the asylum 56 were sent on transfer from Taiping Leper Asylum. The large proportion of voluntary admissions during 1926, would appear to demonstrate the value of establishing an institution for lepers where it is known to the outside public that leprosy will not only be treated effectively, but in addition, the patient will be able to live a comparatively happy communal life.

TRANSFERRED CASES.

Five insane patients with homicidal mania were transferred to the Central Mental Hospital, Tanjong Rambutan.

ABSCONDING CASES.

Most of these were cases who would not look like lepers to the lay person. The majority returned sooner or later for various reasons. Some were brought back by the police who are notified in each case of absconding. Others returned owing to inability to find occupation. Some Chinese returned because their relatives still regarded them as legally dead, having been lepers; and others because the advantages of living within the Asylum completely outweighed those of living outside.

TREATMENT.

Tai Foong Chee Treatment.—The Tai Foong Chee treatment is being given as a routine method to patients; men, women and children. It is occasionally modified by the addition of bismuth for those who suffer from symptoms of indigestion.

This method of treatment is undoubtedly the most convenient and satisfactory form of routine treatment that could possibly be used for large numbers of lepers of mixed nationalities. It is effective, convenient to prepare and distribute, and has few disadvantages.

VARIATIONS IN RESPONSE TO TREATMENT.

The difference in response to treatment in cases with the same degree of infection and the same type of leprosy is difficult to explain and may depend upon variations in metabolizing the chaulmoogra derivatives within the body as well as other considerations, such as intercurrent infections and resistence to disease in general. Some lepers display a marked idiosyncrasy towards chaulmoogra derivatives and are in the same unfortunate position as is the patient with malaria who is unable to take quinine in any form.

For this type of leper, colloidal antimony injected intramuscularly has been of distinct benefit in arresting the disease and in some cases causing improvement.

E.C.C.O. TREATMENT.

The Ethyl Esters of the oil from Hydnocarpus Wightiana combined with camphor, creosote and olive oil have been injected in a large series of more or less stationary cases. Two hundred and sixteen patients applied for a course of injections, treatment being entirely voluntary.

Nationalities were as follows:

Chinese	141
Tamils	61
Others	14

Men, women and children received injections, ages varying from 5 to 55. The response to treatment depended upon the original severity of the case, the type of leprosy and the already mentioned tolerance of chaulmoogra derivatives.

In all 3,636 injections were given by the Medical Officer in charge. The sites chosen for injection were mostly the upper part of the arm and the outer side of the thigh and injections were given intramuscularly. No case of injection abscess occurred.

Results are shown as follows :

Six patients received 50 injections or more.
Of these five were much improved, one improved.

Sixteen received 40 injections or more.
Of these ten were much improved, five were improved, one remained stationary.

Twenty-one received 30 injections or more.
Of these nine were much improved, ten were improved, one stationary, one worse after 35 injections.

Thirty-six received 25 injections or more.
Of these six were much improved, 18 were improved, 11 stationary, one worse after 26 injections.

One hundred and thirty-seven received 15 injections or over.
Of these one was much improved, 121 improved, 15 were stationary.

Some of the results obtained were striking and most gratifying. The figures given above show that E.C.C.O., if persisted with, is a valuable drug in connection with treatment of the disease and, in addition, emphasises the varied response to treatment.

Some of the cases treated became bacteriologically and clinically negative and are reported as "much improved". The term "cure" is not used as it is agreed that one year at least under repeated bacteriological and clinical observation is required to form an opinion regarding cure.

DRUGS SUBMITTED FOR TRIAL.

Ethyl Esters of the oil from Gorli seed (Onchoba Echinata) were received from the Under Secretary of State, Colonial Office.

The Gorli seed had been supplied by the Commissioner of Lands and Forests, Sierra Leone.

The oil contains as its principal component, a glyceride of chaulmoogric acid and was sent for trial in a series of cases at the Leper Asylum.

After some months of use, 30 patients being injected, it was concluded that the ethyl esters of gorli seed oil were of little or no value in the treatment of leprosy. In addition, changes occurred in the oil rendering it very irritating and unsuitable for injection.

Oil from the Setumpol Tree.—The Setumpol tree is a Malayan species of taraktogenos or hydnocarpus. The oil from the seed approximates in its physical and chemical properties to those of chaulmoogra oil and was submitted for trial.

Injections of the pure oil from the seeds of the Setumpol tree gave rise to pain and local irritation and its use was discontinued. It is thought that ethyl esters of the oil might be more suitable and it is intended to conduct a future investigation as large supplies of the oil are obtainable locally.

Ethyl Esters of Chaulmoogra Oil prepared in Siam.—Both plain and iodised esters were submitted for trial. At first these were satisfactory but later, changes occurred rendering them unsuitable for injection.

Vaccine Treatment.—A large nodule was excised from one of the patients. this was dried in a dessicator, pulverized, ground with sterile sand, mixed with carbol saline and made into an emulsion containing approximately 100 million lepra bacilli per cubic centimetre. Counting of the bacilli was facilitated by mixing them with cocci from a standard emulsion, staining and then performing a differential count. The emulsion of bacilli was sterilized by heating to 60°C for 40 minutes, the sterility being tested subsequently.

This vaccine has been used in two cases of nodular leprosy who showed no improvement with other methods of treatment and who are gradually becoming worse, one being an advanced case and other less advanced.

In the less advanced case there has been a decided improvement. Treatment has been stopped for the time being in the advanced case owing to sudden disintegration of all nodules with distressing secondary infection. The use of the vaccine will be continued after healing of the skin.

Hasson's Vaccine.—During the year Dr. James Hasson of London reported the successful use of a special vaccine prepared by him from serum produced directly from leprous nodules.

The technique is briefly as follows: A leprous nodule or patch is blistered with carbon-dioxide snow and the serum collected from the blister 24 to 36 hours later. The serum and the contained lepra bacilli are incubated at 36°C for three months, the bacilli counted and then mixed in certain proportions with an emulsion containing bacillus pyocyaneus.

Dr. Hasson kindly entered into correspondence with the Medical Officer, Leper Asylum, Kuala Lumpur, and supplied further details as regards preparation of the vaccine.

The chief difficulty encountered was that of obtaining sufficient bacilli in the serum and after a number of trials the preparation of the vaccine was temporarily abandoned.

OTHER METHODS OF TREATMENT.

For the so-called leprous reaction or leprotic fever which is so distressing, hexamine given internally combined with injections of adrenalin has been found of great use in shortening the time of the reaction and in many cases arresting it completely.

Adrenalin is given as the reaction is thought to be of the allergic type depending on the patient becoming sensitized to a certain protein, whether it be a protein product due to autolysis of tissue or a sensitization depending on the presence of the lepra bacillus, it is difficult to say; but a reaction may be readily induced by potassium iodide given by mouth or large doses of E.C.C.O. administered by injection.

Various dye antiseptics are of value in rendering the leprous ulcerations comparatively free from secondary micro-organisms and promoting healing.

DISCHARGES.

At the beginning of the year it was found that there were 20 patients who had been clinically and bacteriologically negative for a year and over.

Of these, five cases who had originally entered the asylum in the early stages of the disease were selected for discharge. Three were Chinese and two Tamils. These were again carefully examined bacteriologically and found negative and after consultation with the Director of Government Laboratories and the Senior Health Officer it was decided to discharge them.

Each of the discharged patients received a small sum of money from the Lepers Aid Fund and departed with much ceremony the Tamils to India and the Chinese to China.

The moral effect on the rest of the inmates was very noticeable and proved a great stimulus both as to hope of recovery and also as regards regularity in taking treatment.

MINOR SURGERY.

A few minor operations were performed on the inmates. An extensive operation of repair was required on one patient who had severed all the structures in front of the wrist with a chopper, the bone being cut in addition. Fortunately there was good healing, an excellent functional result ensuing.

EPIDEMIC DISEASES.

During the year there has been an outbreak of chicken-pox among the children and, in addition, a generalized epidemic of influenza during which very few of the patients escaped infection. In both of these isolation and disinfection of patients and belongings were practiced as far as possible. No deaths attributable to either of these diseases occurred.

ANTI-OPIUM TREATMENT.

Sixteen cases who were opium addicts and who were unable to obtain opium were given a course of anti-opium treatment. In most of the cases, treatment was continued for a period of four to six weeks. One of the cases only reported a lessened craving for the drug.

PATHOLOGY.

Post-mortem examinations were conducted in a number of cases where the cause of death was somewhat uncertain and sections of the various lesions were examined microscopically.

A number of interesting features were noted in advanced cases of mixed leprosy among these being the enormous number of lepra bacilli contained in the spleen, and, in addition, the universal distribution of the bacilli in the nerves of the nerve-anaesthetic types. In one case with clinical involvement of the peroneal nerve only, bacilli were found high up in the sciatic nerve at the level of the gluteal fold. Sections of various specimens were sent to England for study and for teaching purposes.

BUILDINGS AND EXTENSION.

To allow for increased accommodation, the fencing has been extended at one end of the Asylum by 100 feet.

Ten new attap houses each holding 14 patients have been erected by leper labour, all are now occupied and four more are in course of erection.

A dispensary has been built by the lepers and has been stocked with most of the usual hospital drugs and mixtures. This has proved of great value in the treatment of the many minor and major ailments occurring among the 600 inmates, those who are able to attend, coming to the dispensary twice a day.

A small mosque and a special bath have been built for the Malay inmates.

Two Class VIII quarters have been built outside the asylum for the reception of two Perak Government servants who have contracted leprosy.

STAFF.

The Medical Officer in charge visits twice daily and an Assistant Surgeon once. During the year Dr. Eu Khay Hoe resigned from the service and Dr. A. Ponniah replaced him.

The remainder of the staff are lepers.

Mr. Bain, the Steward, has continued his excellent work of previous years and has been quite unsparing of himself in his devotion to the welfare and comfort of the inmates. He is especially commended for the fine work he has performed while labouring under great difficulties.

Mr. Yen Zye Yew, the schoolmaster, twice daily conducts classes in the school house for about 32 children who are receiving an excellent education. Classes in physical drill and Chinese shadow boxing are also held.

Mr. Ah Chai replaced Mr. Ah Wai as head attendant and has been of great assistance in various way including the checking of the formation of various secret societies among the Chinese inmates. In the majority of cases these secret societies are formed for no good purpose and invariably tend to upset the discipline of the Asylum.

AMUSEMENTS.

Both Chinese and Tamil theatrical performances are given at regular intervals. The new Chinese Dramatic Society is very successful and has an efficient organiser in Chan Tong Yen who is an illusionist and conjurer of extraordinary ability.

A new badminton court has been installed and the game is very popular. Ping-pong is also played and tournaments in both games are frequently held.

Athletic sports are held every six months, the programme including most of the usual events such as flat-races, hurdle races, tug-of-war, etc. Entries are received from all nationalities and men, women and children compete in the various events.

A Christmas tree and a party were given to the leper children. Each child received one or more presents. A quaint effect was lent to the ceremony by the children singing well-known Christmas carols with English melodies and Chinese words.

GENERAL.

It is estimated that there are approximately 2,500 to 3,000 lepers in Malaya and of these about 1,500 have entered Leper Colonies. This proportion of lepers segregated, compares most favourably with any tropical country in the world. In India, at a rough estimate, there are nearly one million lepers, 30,000 of these only have been confined to Leper Colonies.

The Federated Malay States Government, through the Medical Department has devoted much attention to the leper problem during the last few years and the new Sungei Buloh Leper Colony with its proposed accommodation for 2,000 lepers promises to be the best and most efficient scheme for the segregation and treatment of lepers, in the world. It should serve as a model for similar institutions in other tropical countries for many years to come.

In many places the distinction between an evil-smelling lazarette and a properly organised Leper Colony is not fully realized. The policy has generally been that of primary segregation and subsequent neglect.

In the Federated Malay States much attention is paid to treatment and conditions of living within the Asylum. The result of this is now being seen in the large proportion of early cases admitted who expect to be cured, and in the large number of patients voluntarily applying for admission.

Previously, life within a lazarette has justly been described as a living death, where neglected and untreated lepers slowly rotted and decayed. Present day conditions afford a striking contrast. The modern Leper Colony is not so much a place of confinement, but a small town which is a haven of refuge. Here are people who have been unfortunate but can still enjoy many of the amenities of their previous existence, and who no longer feel the utter misery and desolation of being both diseased and outcast.

I have the honour to be,

Sir,

Your obedient servant,

(Sgd.) RICHARD GREEN,

Medical Officer in Charge, Leper Asylum,

Kuala Lumpur.

REPORT ON INFANT WELFARE WORK IN KUALA LUMPUR FOR THE YEAR 1926.

INFANT WELFARE CENTRE, SULTAN STREET.

Four years have elapsed since this, the first Centre in the Federated Malay States was opened. The progress made by the work during that period necessitated additions to the building, increase in staff, and during the last year longer working hours, as it was found impossible to cope with the work as arranged for in the original time table.

Before describing what was attempted during the year 1926 it may be of interest to mention the general change that has taken place during these four years in the attitude of the parents towards the aim and object of the Centre. They were originally full of fears and prejudices and attended only after much persuasion and in a very hesitating manner; they vouchsafed no signs of approval or otherwise at the instructions given them and appeared completely mystified and far from happy. To-day on visiting the Centre one can see for oneself that these same people are now thoroughly at home and have lost their fears, their attendance weekly is regular and they bring not only their own babies but their neighbours; they demand instructions saying "please tell me about the feeling"; they occasionally even ask for the instructions to be written in case they forget them. Such change of attitude is due in a large measure to time, helped no doubt by the fact that they have grasped a clearer idea of the aim and object of the work and thus realise their responsibility with regard to the welfare of their children.

THE STAFF.

The staff of the Centre is as follows:

One Lady Medical Officer;

Two European nursing sisters;

Six health visitors;

One laboratory assistant;

One dispenser;

One clerk.

WORK AT THE CENTRE.

Apart from the usual activities of the Centre the following problems had to be faced at the beginning of the year. They are summarised thus:

(i) Keeping the actual work of the Centre definitely within control, by which is meant limiting it unreservedly to the preventative side of medicine;

(ii) Extending the work among Malays, especially to those living in the distant kampongs;

(iii) Establishing a satisfactory method of dealing with records for statistical and routine tabulations.

The difficulty mentioned in last year's report of keeping the work to the preventative side of medicine was again experienced and it was recognised that such difficulties would increase unless a definite line of action was taken. To limit such possibility it was decided:

(i) Getting rid of all the "odd cases" such as old grandmothers, women not mothers, etc., who expected treatment for their various ailments at the clinic;

(ii) Mothers and babies to replace these "odd cases" and the time previously given in treating them to be utilised in giving more detailed practical instructions to the young mothers.

It was at once obvious that such arrangements would not be popular and for the first-half of the year considerable difficulty was experienced. The old grandmother objected strongly to being sent elsewhere for treatment, although given a chit and provided with transport, whilst the cases requiring hospital treatment were only induced to go there after much persuasion. These people soon realised however that they had to accept the explanation given and that the change of policy was for the benefit of the baby and its mother and in keeping with the object of the Centre.

In October the largest number of infants attending the clinic was recorded and there was a considerable reduction in the "odd cases" thus showing a step in the right direction. Such action will however need careful watching as it will be subject to the usual relapses which go hand in hand with any attempt at reconstruction or re-education.

The difficulty in dealing with Malays was the fact that transport had to be provided for those even living within a reasonable walking distance. A Chinese mother is prepared to walk a distance of two or three miles with a baby strapped on her back and leading a small child by the hand and such is so with other nationalities, but the Malay parents must be collected and delivered otherwise one would never see the majority of them.

To deal with work in the distant kampongs two health visitors were given the motor bus three and a half days weekly to bring mothers and babies to the Centre. The kampongs visited are within an area of twelve miles from Kuala Lumpur and the mothers are collected by the health visitors daily at 7.30 a.m. and 1.30 p.m.

This work is under the supervision of the Sister in charge of the district, who visits these places beforehand explaining to the parents the object of the work and telling them the day and hour the bus would call for them. At first difficulty was experienced in getting them to come as some had never left their kampongs before but when a few of the more heroic ones had ventured out and were returned safely the others lost their initial fears and also started attending. It was observed that the mothers were more interested when brought to the Centre to learn mothercraft than when any attempt was made to teach them in their own homes. The struggle to get their attention and the effort to entice these Malays to come to the clinic continued throughout the year but was not without success. The number of attendances for November and December being 781 and 775, respectively, against the figures for the corresponding months of 1925 of 177 and 197.

The list of Malay kampongs visited is attached.

It was found necessary to start a card index system in March as up to that time there was no very satisfactory method for keeping records required for annual reports and official returns. The Chinese surnames were the first difficulty as in order to get any accuracy and uniformity in the spelling of these it was necessary to obtain a list of Chinese surnames (commonly called "Seh") as pronounced in different dialects. and so become familiar with the commoner ones. Nearly all Chinese are able to recognise the Chinese character for their "Seh" and the ones who are not, are asked to find out from their husband or relations and to bring the information on their next visit. It was troublesome at the start and took up a considerable amount of time and patience but the consolation remained that a useful and accurate record of every mother and infant attending the clinic was then in existence.

The next obstacle to overcome was to impress on the parents the value of the reference card given to them containing the name, number, etc., of the mother and infant. In spite of the fact that its object was carefully explained to them and on the card itself was written in four languages "Please bring this card with you next visit," they invariably came without it. The chief excuses being either that the baby chewed or tore it, that they left it in a friend's house, or lost it in the bus. One mother having come twice in succession without it and not daring to appear a third time with the excuse that she couldn't find it promptly borrowed her neighbour's and triumphantly arriving at the Centre handed it in; this of course would have led to all sorts of confusion if she had not been recognised by the health visitor who knew she did not posses an infant of the name and age as indicated on the card.

In addition to the usual instruction given at the Centre an attempt was also made during the year to include some simple teaching in elementry hygiene to a few of the bigger children who came with their parents. Simple explanation of the causation of malaria, plague and ankylostomiasis were given. Posters of the mosquito, the rat, and of good children wearing shoes, to prevent hook worm infection were drawn up and proved very helpful. These simple lectures as stated were only intended for children, but they also attracted the father and mother who listened attentively and were quite interested in the childish explanation of these diseases given to the younger members of their family. To help the poor mother who could not afford to buy shoes for her children, a paper pattern was given her from which a useful and serviceable pair of shoes could be made with very little trouble from an old felt hat. Other improvised garments were also shown her such as a child's vest made from the father's old one, and child's trousers made from sleeves of a mother's baju, etc.

Owing to the large percentage of infants suffering from marasmus or malnutrition seen at the clinic it occurred to one that a great deal more illness was due to defective diets than was at first recognised and an effort was therefore made to provide such infants with a vitamin-rich diet—The result justified the contention that many cases of marasmus were due to vitamin deficiency. The food of these infants which was milk in simple dilution was enriched by the addition of a mixture of cod-liver oil, oil emulsion, marmite and orange juice in order to make sure of adequate supplies of Vitamines A, B, C and D, respectively. The dosage starting with half drachm was gradually increased to two drachms and must not exceed that amount at age two to three years. It was feared the emulsion not being a very palatable one, would be disliked by the children but such was not the case, its fishy taste making it like the Chinese sauce which is used extensively in the preparation of food by most native mothers. The vast majority of babies improved rapidly on the mixture and it became very popular. Such simple dietetic measures would not only prevent and diminish the amount of marasmus and malnutrition but should produce teeth better formed and less liable to decay—a very important factor here where at least 90 per cent. of the poorer children suffer from dental caries.

Another factor of importance that emphasized itself during the year was the discovery of a large number of infants, the majority under six months, found to be suffering from malaria. These babies generally came from distant kampongs and were brought because of their extreme palor, and the fever from which they occassionally suffered; the mothers on being questioned said that the babies took their food moderately well and did not appear at any time to be what they considered really ill. They were merely worried because of their paleness and the fact that they were not as bright as other children of the same age. On examination they had a marked degree of anaemia, a palpable spleen and their blood was full of parasites, they however improved with treatment and the mothers were carefully instructed on the cause and prevention.

The point to note about such cases is that these babies would have been left undiscovered and untreated if the kampongs were not visited by the sisters and health visitors and the mothers brought to the Centre. Many infants must have died in these distant places and the ones who survive are probably the anaemic specimens with enlarged spleens and a history of fever since babyhood so common at a school inspection. These children the school teacher will tell you are very often absent owing to fever, that they are always tired and very slow to learn. One does not know if there are any statistics to show the number of infants, say under three and under six months, found to be suffering from malaria, but the matter is worth investigation as the numbers found in the clinic during the year were alarming.

Weighing the baby has become quite popular and none of the difficulties experienced in the first years were met with, the mothers always asking the weight-gain in order that they could tell the father and grandmother as they too were very interested and were always anxious to know the progress made by the baby.

ANTE-NATAL WORK.

There is still some difficulty in getting the poorer mothers to hospital for confinement. They will explain carefully that it only means leaving a large number of young children at home with no one to look after them, the father being at work all day—and the neighbours themselves already having many of their own to supervise. It means also that the mother only worries while in hospital and is not happy until she is at home again.

They attend the clinic regularly during the ante-natal period for the routine examinations and supervisions, and if they are unable to do so the last month or two they are visited by the sister and health visitor and arrangements are made for them to have their babies at home with as much comfort and safety as is possible under the circumstances.

An obstetrical packet is given to every poor expectant mother who needs it as it helps to carry her through the first few days after her confinement, many of them living as they do in great poverty and being unable to get more than a few rags together for the event. The discovery of cases of "post-puerperal beri beri" was mentioned in last year's report and as a preventative measure treatment with Vitamin B extract prepared at the Institute Medical Research was given with good results to many ante-natal mothers during the year. The occurrence of beri beri in a woman after childbirth was commented upon by all the earlier writers on that

disease. Thus Bently (1893) in discussing the predisposing cause of beri beri says "It is rarer among women but I have seen it attack them shortly after childbirth, when it makes its appearance during the second week before the disappearance of the lochia. The most remarkable instance of this occurred in the family of a native (Malayan) prince, where three of his relations, all young women in the prime of life, were at intervals of about a year each, attacked with this disease-in one of them proved fatal after a duration of six months from the onset of acute symptoms. A very peculiar fact, and one which I am quite unable to account for, is the susceptibility of women after childbirth to be attacked with beri beri. Is it that they are more liable to any acute infectious disease as they undoubtedly are, for instance scarlet fever and other exanthemata?"

In later studies on the causation of beri beri in relation to diet and especially in the development of the order of ideas associated with the term "Vitamines" it came to be believed that the incidence of the disease is highest, other things being equal, among those upon whose metabolic processes the greatest demands are made. This is the theory now commonly held to account for the relatively high incidence of beri beri in women during the period of puerperium. With the present knowledge of the causation of beri beri success has been met with in this country in reducing nearly to the vanishing point the incidence of the disease among groups of people formerly decimated by it, such as prisoners in gaol and workers in mines, but it appears that this knowledge has not been given its due effect in the control of the disease among native women after childbirth. Owing to its frequent occurrence and very high mortality rate post-puerperal beri beri is a disease that demands renewed attention and every effort should therefore be made to obtain suggestions for its more efficient control.

VENEREAL DISEASE.

The number of cases of babies suffering from "Heredo-Syphilis" is still large, probably because the mothers themselves refused to undergo any treatment. They maintain that as they feel quite well they cannot in any way be responsible for the condition of the baby and are therefore loathe to undergo any curative treatment.

RECORD OF ATTENDANCES.

Infant Welfare Centre.

1926.	Infants.	Children.	Women.	Total.
January	1,623 ...	316 ...	287 ...	2,226
February	1,317 ...	346 ...	275 ...	1,938
March	1,779 ...	538 ...	302 ...	2,619
April	1,383 ...	329 ...	245 ...	1,957
May	1,909 ...	429 ...	372 ...	2,710
June	1,875 ...	469 ...	399 ...	2,743
July	1,987 ...	507 ...	419 ...	2,913
August	1,382 ...	301 ...	276 ...	1,959
September	1,594 ...	364 ...	371 ...	2,329
October	2,042 ...	360 ...	472 ...	2,874
November	1,979 ...	361 ...	506 ...	2,846
December	1,922 ...	323 ...	472 ...	2,717
Totals 1926 ...	20,792 ...	4,643 ...	4,396 ...	29,831
Totals 1925 ...	16,005 ...	4,259 ...	2,870 ...	23,134
Totals 1924 ...	9,106 ...	3,193 ...	4,039 ...	16,238
Totals 1923 ...	5,777 ...	2,872 ...	3,559 ...	12,208

RECORD OF ATTENDENCES BY NATIONALITIES.

1926.	Chinese.	Tamils.	Malays.	Others.	Total.
January ...	1,469	418	206	133	2,226
February ...	1,246	341	239	112	1,938
March	1,880	341	283	115	2,619
April	1,363	357	162	75	1,957
May	1,896	403	305	106	2,710
June	1,888	417	324	114	2,743
July	1,881	523	401	108	2,913
August	1,302	354	203	100	1,959
September ...	1,470	440	308	111	2,329
October ...	1,870	428	477	99	2,874
November ...	1,666	321	781	78	2,846
December ...	1,633	275	775	34	2,717
Totals 1926 ...	19,564	4,618	4,464	1,185	29,831
Totals 1925 ...	15,331	4,095	2,355	1,353	23,134
Totals 1924 ...	11,300	3,369	582	987	16,238
				Grand Total 1926 ...	29,831

The following graphs are attached :

(1) Malay attendances from July, 1922—December, 1926;

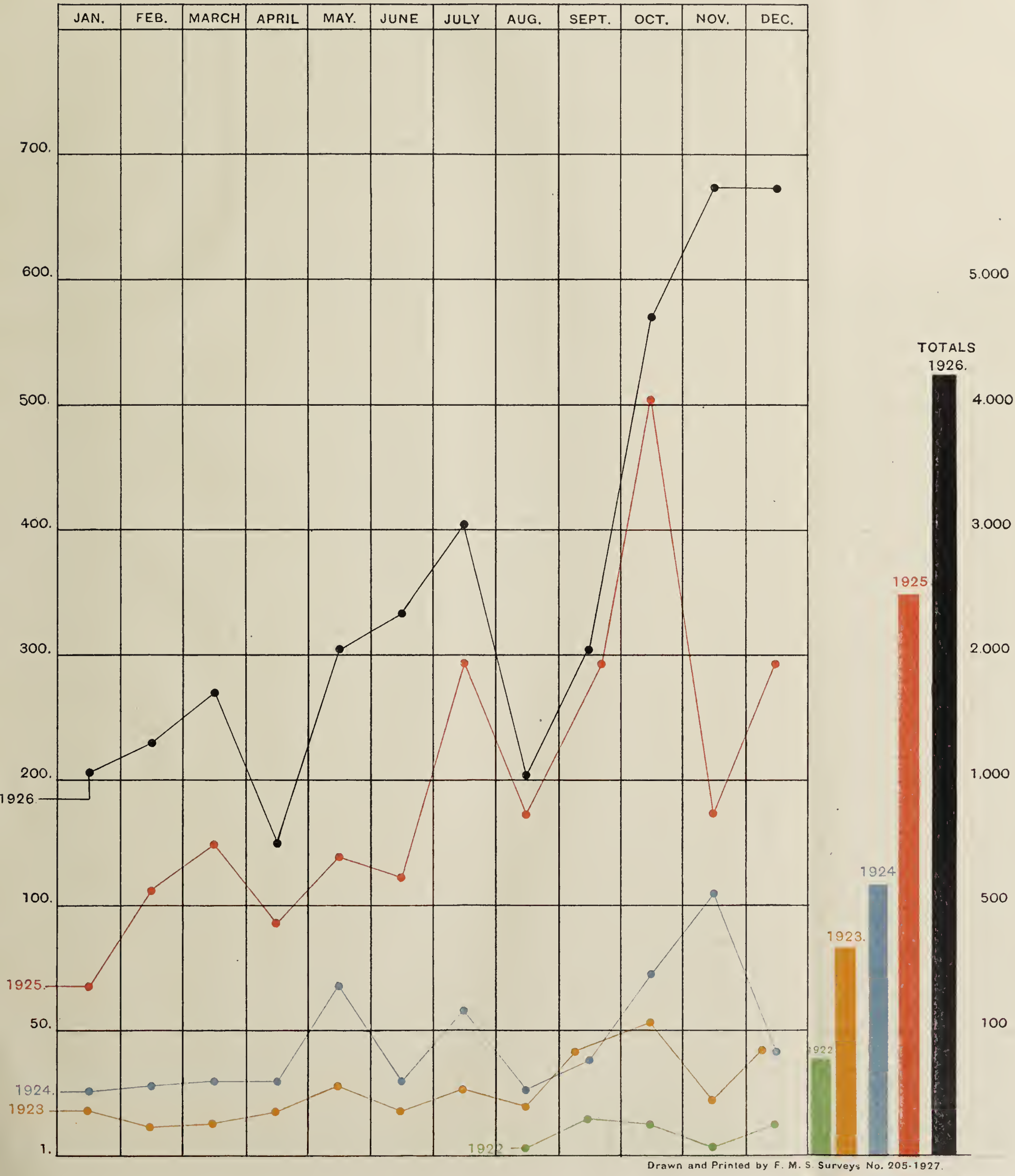
(2) Ante-natal attendances from July, 1922—December, 1926;

(3) Attendances of infants, children and mothers from July, 1922—December, 1926;

(4) Attendances of infants, children and mothers for the year 1926.

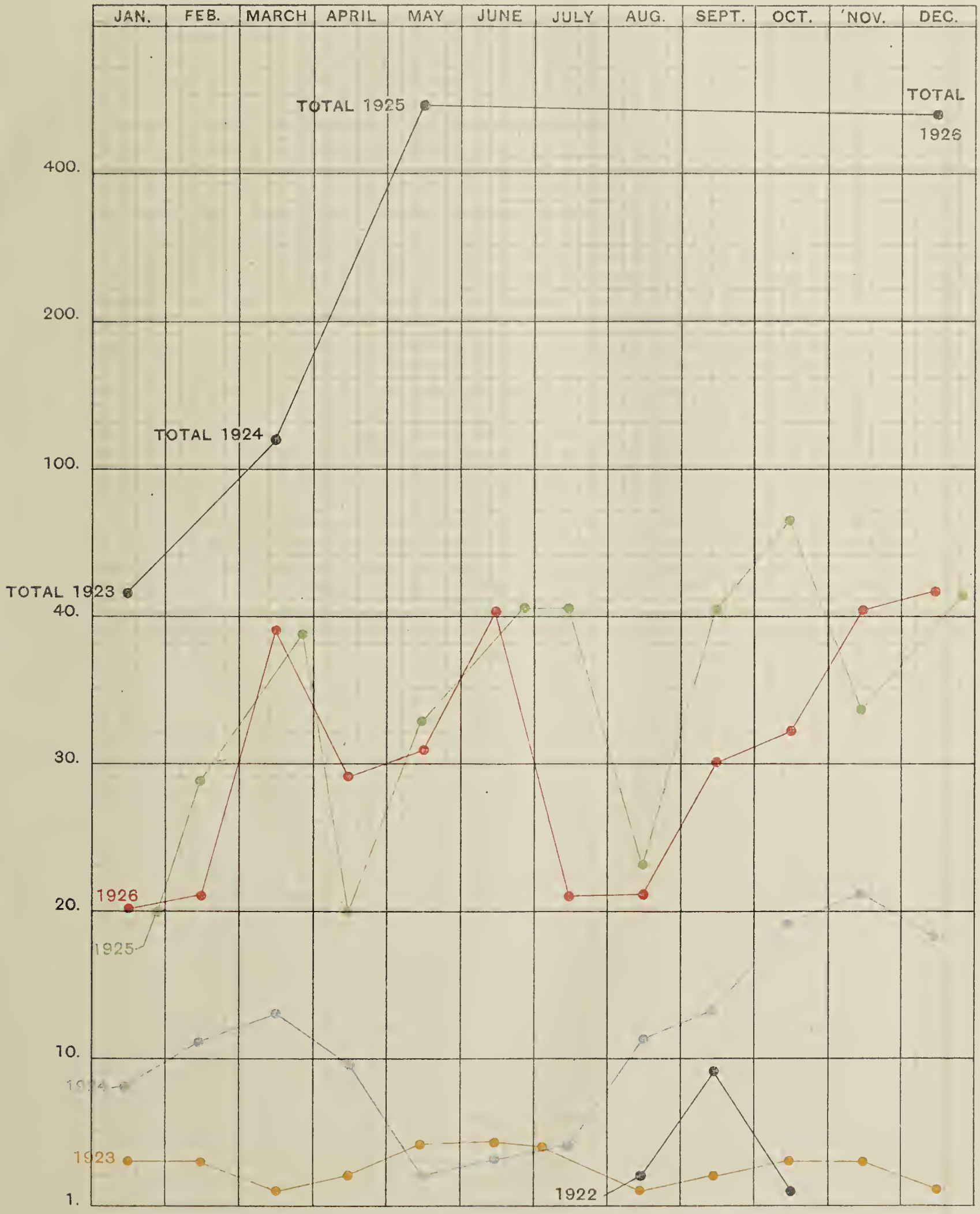
INFANT WELFARE CENTRE, KUALA LUMPUR

MALAY ATTENDANCES FROM JULY 1922 TO DECEMBER 1926.



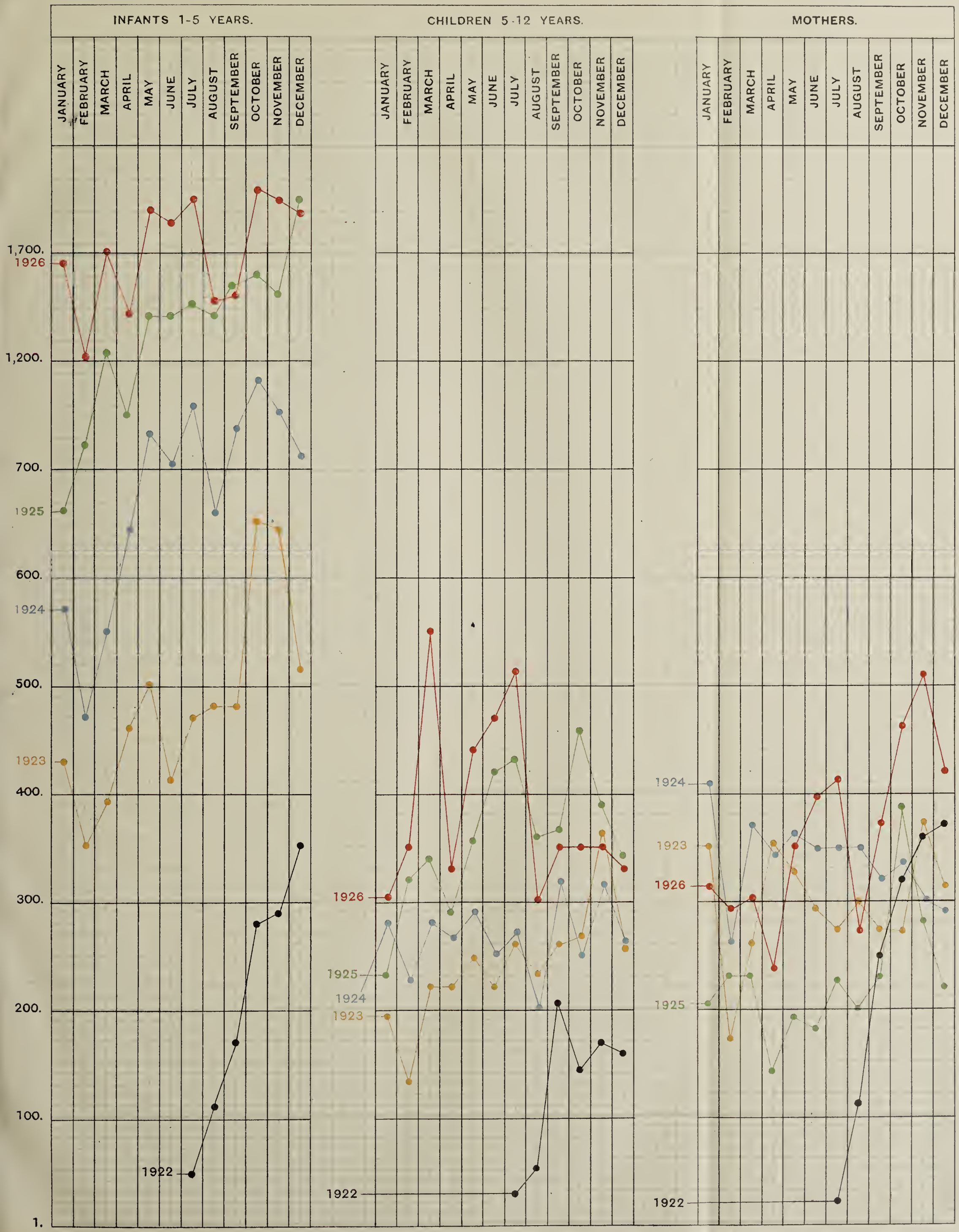
Drawn and Printed by F. M. S. Surveys No. 205-1927.

KUALA LUMPUR INFANT WELFARE CENTRE ANTE-NATAL ATTENDANCES FROM JULY 1922 TO DECEMBER 1926.



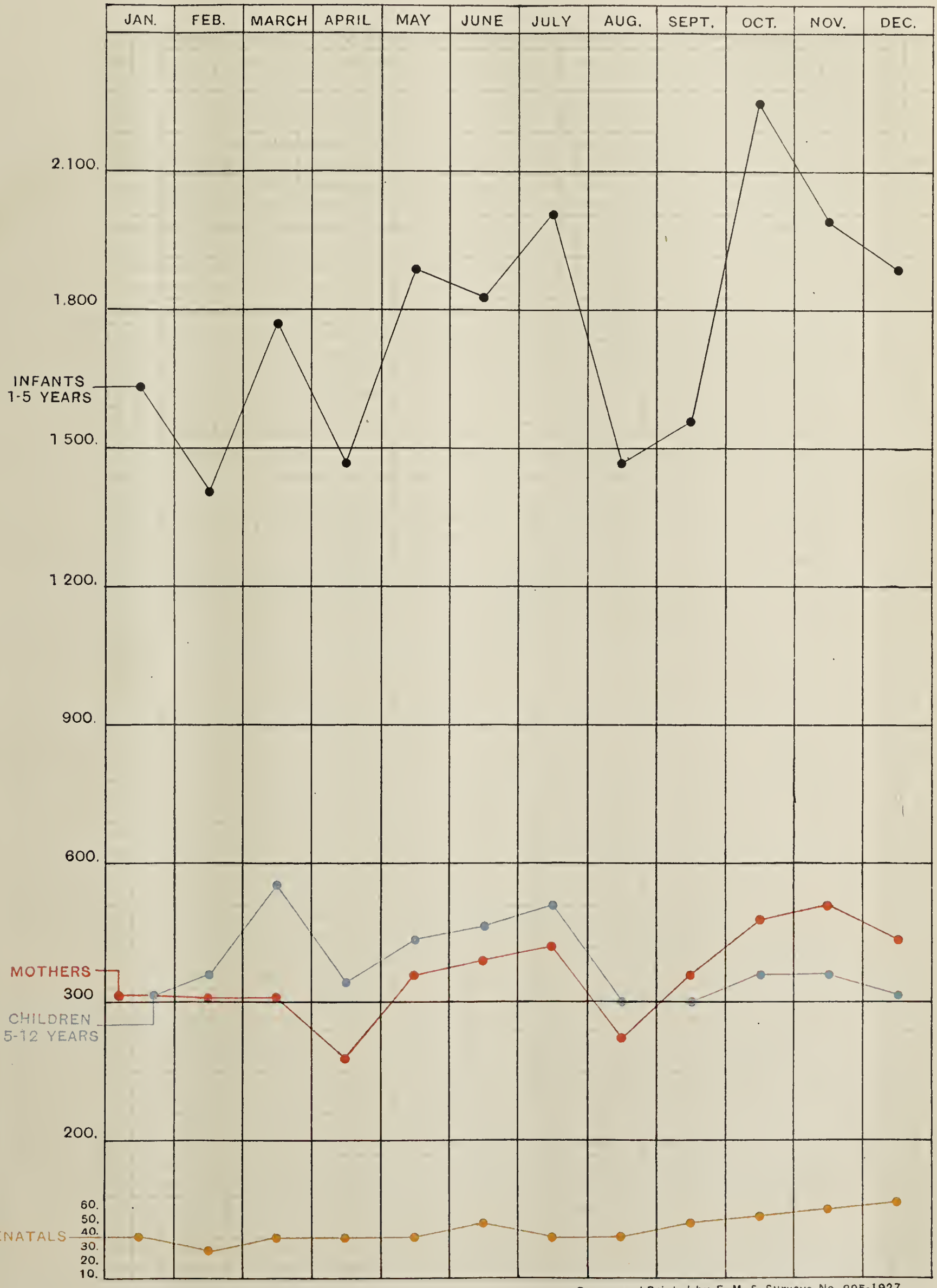
Drawn and Printed by F. M. S. Surveys No. 205 - 1927.

KUALA LUMPUR INFANT WELFARE CENTRE ATTENDANCES FROM JULY 1922 TO DECEMBER 1926.



Drawn and Printed by F. M. S. Surveys No. 205-1927.

ATTENDANCES AT THE INFANT WELFARE CENTRE, KUALA LUMPUR
1926.



Drawn and Printed by F. M. S. Surveys No. 205-1927.


Wellcome Institute
London

HEALTH VISITORS IN THE HOMES.

As stated this has been extended to Malays living in kampongs within a twelve-mile radius of Kuala Lumpur, and the difficulty in collecting the Malay mothers and their babies and getting them to the Centre can only be appreciated by those who have tried it. They are never ready when the bus calls for them and the health visitor very often has to dress the mother and infant and lead them through the kampongs to the car waiting on the main road. They seem to have no idea of time and never by any chance know the baby's correct age; for instance the mother will tell you her infant is two months old at its first visit to the Centre and at the second visit, which may be a fortnight later, its age has suddenly jumped to six months. They are pathetically helpless regarding themselves and hopelessly so regarding the welfare of their children but they are anxious to learn and quite appreciative of the fact that they are now getting a great deal of attention.

Having got them to the clinic for the first time they are taught one or two elementary facts which however are forgotten by the time the bus is due to take them home, however reiteration on their subsequent visits eventually produces results and after their tenth visit or so they remember most of the facts taught them. Their intelligence varies with the district they come from, thus the Gombak people about 12 miles from Kuala Lumpur are quite bright, the kampongs in that area being near the road which gives them a better chance of seeing and mixing with other people. They are a striking contrast to the Malays that come from Sungei Penchala, 7½ miles from Kuala Lumpur, where the kampongs are 3 or 4 miles from the main road and where they have not the same opportunity of meeting people with the result that they are dull, nervous and slow. At the clinic they are provided with milk whilst waiting, special cases being given feeding bottles, patent food, vitamin emulsion, etc., and the health visitor sees them safely back to their homes. There is no difficulty with the Chinese now, they attend regularly and have grasped quite a fair knowledge of the work. They come from all parts and are very interested. The Tamils are slow, but attend regularly and definite improvement is noticeable.

District visiting is recognised as the most important part of child welfare service and the work done here by the staff has been exceptionally good throughout the year.

LIST OF MALAY KAMPONGS FOR DISTRICT VISITING WITHIN TEN MILES RADIUS FROM KUALA LUMPUR.

1. Segambut	3¼ mile turning off Batu Road. Most Malays are congregated near the Malay school.
2. Batu Village	Five miles, Kepong Road. Malay centre about 100 yards from the road junction.
3. Selayang	6¾ mile, Batu Caves Road. Road centre for Selayang Malay Reservation in the reservation are two very thickly populated Malay kampongs about ¼ mile from 6¾ miles and 8th mile, Rawang Road.
4. Pantai	A turning off 4½ miles, Petaling Road.
5. Petaling Station	5½ miles, a turning off New Petaling Road. This is a convenient place for Malays on the Klang River and also from Pantai.
6. Ampang Village	Five miles. The Malay centre is near the mosque 100 yards before the entrance to the village.
7. Ulu Klang	7½ miles via 4½ miles village, Ampang Road. The Malay are mostly at the northern end of the village.
8. Sungei Penchala Village ...	7½ miles, Old Damansara Road. This is the meeting place for Malays from the Sungei Penchala Malay Reservation to the north and small holdings to the south.
9. Gombak	4th to 10th mile.

HEALTH VISITORS' VISITS TO HOMES.

1926.	
January	1,763
February	1,179
March	1,607
April	1,176
May	1,435
June	1,328
July	1,294
August	1,033
September	798
October	1,494
November	1,060
December	1,118
Total	15,285
Grand Total 1926	15,285
Grand Total 1925	13,221
Grand Total 1924	10,532
Mothers and babies conveyed by transport	9,833

MATERNITY AND CHILD WELFARE WORK DONE DURING THE YEAR.

Nature of work.	Total.
Number of clinics held	536
Number of mothers seen by doctor:	
Ante-natal	398
Post-natal	3,998
Number of babies entered on register during year	4,419
Number of babies seen by doctor	13,424
Number of babies weighed	3,248
Children normal—general advice given	2,527
Suffering from incorrect feeding	2,630
Suffering from worms	6,355
Suffering from malaria, mothers and children	1,736
Referred to hospitals	261

VISITS PAID BY NURSES.

To expectant mothers	686
To infants under one year	8,542
To children aged one-five years	6,057
Total visits paid by sisters	4,115
Total visits paid by nurses	15,285
Number of mothers and babies brought by motor transport	9,833

EDUCATION AND PROPAGANDA.

The fourth infant welfare exhibit and the third baby competition took place at the Malayan Agri-Horticultural Exhibition held in Kuala Lumpur in August.

The Exhibit was prepared by the staff of the Infant Welfare Centre on the lines of previous years with the following additions:

(1) A vitamin section;

(2) Elementary hygiene section;

(3) Practical demonstrations in

(A) Feeding of infants including the following:

(i) Preparation of cow's milk;

(ii) Condensed milk;

(iii) Patent food;

(iv) Thin cereal food for an infant of about seven months;

(B) Bone and vegetable soup;

(C) Albumen water;

(*D*) Raw meat juice;

(E) Fruit juice.

The demonstrations were held every morning from 12-1 and every afternoon from 4-6 and the lectures accompanying them being given in Malay, Chinese and Tamil by the health visitors. The preparation of food, etc., came in for a lot of attention, the cooking being done on charcoal and oil stoves in a fashion possible to all the lookers-on.

INFANT WELFARE FILM.

This proved by far the most useful form of propaganda. It was arranged by the Secretary of the Infant Welfare Advisory Board and shown at the local Cinemas. It depicts the work as daily carried out at the Centre and in the district.

BABY COMPETITION.

The total entries for this numbered 275; the figures for Malays being nearly double that of other years.

A thousand dollars was handed in at the Centre for prize money for the baby show which facts fully demonstrates not only its popularity but the appreciation of all nationalities to the Government's generous effort made on behalf of the welfare of their children.

Miss Tan Kim Eng, health visitor, joined the staff in May, 1926.

M. JOSEPHINE WERE,

Lady Medical Officer, Infant Welfare Centre,
Kuala Lumpur.

REPORT ON INFANT WELFARE WORK IN IPOH, FOR THE YEAR 1926.

PREMISES.

On 1st May, the Welfare Centre was removed from the shop-houses in Treacher Street to the Yau Tet Shin building in Club Road. This building, though by no means ideal for a Welfare Centre is a great improvement on the previous premises. It consists of two wings—one being used for the Town Dispensary and dresser's quarters—the other having the Health Visitors quarters on the first floor with waiting, consultation, examination and dressing rooms on the ground floor. These latter rooms are well ventilated, well lighted and spacious but in spite of all efforts have not that appearance of scrupulous cleanliness possible in a building specially built for a Welfare Centre.

STAFF.

One part time Lady Medical Officer.

One European Nursing Sister.

Two Health Visitors.

One Amah.

The dispensing is done by the dresser-in-charge of the Town Dispensary.

On December 4th, Miss E. M. Goulding, European Nursing Sister, commenced her long leave. Her place has been filled by Miss M. Grice. On May 1st, Mrs. M. G. Paul began duty as a Health Visitor. Neither Health Visitor has the necessary qualifications for the post. Nurses with the necessary qualifications are very hard to get as not only must they have completed their hospital training and be certified midwives but also they must be able to speak English, Malay, Chinese or Tamil.

WORK AT THE CENTRE.

The centre still continues to be more an out-patient department for the treatment of disease than an institution for its prevention. The work is by no means confined to maternal and child welfare. Any woman wishing to consult a Lady Medical Officer must either be admitted to hospital or wait for one special afternoon set aside each week for examination at the hospital of gynaecological patients, or come to the centre. Many women refuse admission to hospital and cannot be turned away to wait for perhaps another week for medical attention; so the only alternative is to treat them at the centre. The teaching at the centre is mostly individual. So far there have been no demonstrations on a large scale. Each mother as she presents herself or child for examination is instructed about infant feeding and general hygiene. Not many women bring their babies for advice, if the latter are perfectly well, unless they have been previously so advised by the Health Visitors. The same may be said of ante-natal cases. There is usually some condition other than pregnancy for which they come to seek treatment. All cases of suspected venereal disease are treated at the District Hospital. Simple chemical examination of urine is done at the centre but any specimens of faeces blood or urine must be sent to the District Hospital for microscopical examination.

RECORD OF ATTENDANCES—INFANT WELFARE CENTRE.

1926.	Infants.	Children.	Women.	Total.
January	604	286	411	1,301
February	443	204	287	934
March	617	307	385	1,309
April	458	207	318	983
May	662	275	366	1,303
June	446	197	361	1,004
July	627	299	391	1,317
August	568	276	403	1,247
September	582	264	443	1,289
October	544	244	359	1,147
November	597	205	336	1,138
December	135	617	356	1,108
Total 1926	6,283	3,381	4,416	14,080
Total 1925	7,215	3,535	4,773	15,523

HEALTH VISITING IN THE HOMES.

During the year, this the most important part of maternal and child welfare work, has progressed considerably. The appointment of a second Health Visitor has enabled the visiting of homes to be greatly extended. Each week a list of birth notifications is sent by the Police Department and births within a radius of approximately 3½ miles are entered in the welfare birth register. It is impossible to extend the work beyond this area whilst the staff consists of only one European Nursing Sister and two Health Visitors whose only means of conveyance is by rickshaw. Chinese are visited by the Chinese Health Visitor, Malays and Tamils by the Tamil Health Visitor. Each visitor spends the whole of alternate days visiting homes. The intermediate days she assists at the centre except for 1½ hours in the morning when in company with the European Nursing Sister she visits particularly newly born babies. One and half hours each morning is the most the Sister-in-charge can be spared from the centre. It is by visiting the homes that most of the preventive work is done. Babies are seen a few days after birth. Mothers are instructed regarding infant feeding and general hygiene. Children under 12 are inspected and sent for medical attention if necessary. Puerperal women if ill are advised to enter hospital. If this advice is not taken the Lady Medical Officer is informed and visits the patient in question. The instruction in the Malay language received by the previous Sister-in-charge has proved invaluable to her in her work in the homes.

HEALTH VISITS.

January	143
February	126
March	175
April	117
May	419
June	487
July	532
August	534
September	760
October	520
November	742
December	1,342
Grand Total 1926	5,897
Grand Total 1925	1,309

MOTHERS AND BABIES BROUGHT BY TRANSPORT.

Nil.

INFANTILE MORTALITY RATE—IPOH.

Year.	Births.	Deaths.	Rate per millie.
1915	641	122	190.00
1916	725	126	173.79
1917	881	168	190.00
1918	843	173	205.22
1919	792	137	173.00
1920	866	137	158.19
1921	898	155	172.61
1922	974	152	156.05
1923	904	119	131.64
1924	1,072	126	117.54
1925	844	120	142.18
1926	1,364	131	96.04

MATERNAL AND CHILD WELFARE WORK DONE DURING THE YEAR.

Nature of work.	Total.
Number of clinics held	543
Number of mothers seen by doctor ante-natal	154
Number of mothers seen by doctor post-natal	200
Number of babies on birth register during year	928
Number of babies under one year seen by doctor	2,201
Number of babies weighed	613
Children normal general advice given	493
Suffering from incorrect feeding	175
Suffering from worms	4,421
Suffering from malaria	262
Referred to hospital	108
VISITS BY NURSES.	
To expectant mothers	146
To infants under one year	3,999
To children 1-5 years	1,752
Total visits by Sister	1,324
Total visits by Nurses	5,897
Number of mothers and babies brought by transport	Nil
Visits are paid once a week to the Gopeng Dispensary.	
Total cases treated	789

M. HEWITSON,
Lady Medical Officer,
Infant Welfare Centre, Ipoh.

IPOH,
25th January, 1927.

ANNUAL REPORT ON INFANT WELFARE CENTRE AND CLINIC FOR MOTHERS, TAIPING, FOR THE YEAR 1926.

STAFF.

One Lady Medical Officer (part time).
One European Nursing Sister.
Two Health Visitors (during nine months, one only has been available).
One Amah.
One punkah-puller.
One peon.

The dresser-in-charge of the Town Dispensary, assisted by an attendant, does the dispensing. Microscopical and chemical examinations are made at the General Hospital Laboratory.

PREMISES.

These consist of a shop-house. Besides a small entrance space and passage there are three rooms.

I. A small cubicle, downstairs, where minor dressings are done.
II. A large room, up steep and narrow stairs, used for waiting, general and exhibition room as well as my office.
III. A small room, used for examination of patients when privacy is indicated.

THE WORK.

The welfare work is beginning to show definite signs of progress.

The number of infant attendances at the weight-clinic is over 800 more than in 1925.

1926—	
Babies weighed	4,768
1925—	
Babies weighed	3,946

The parents are bringing their children much more willingly and without such frequent remindings by the Health Visitor—they show quite an eager interest in the progress of their babies' weight and seek our advice on various matters of infant upbringing.

ANTE-NATAL CLINIC.

This most important branch of our work is proving almost the most difficult to establish. There is the usual trouble of trying to induce the prospective mother who thinks herself perfectly well, to make sure not only that she really is so, but that she remains so.

Prospective mothers frequently come up with some small complaint connected with their pregnancy, but unless the women give some promise of continued attendance, they are not included in the ante-natal returns. The number of cases which have been kept under observation for several months before confinement and then visited afterwards by the Health Visitor is small.

MIDWIVES.

There are six certified midwives practising in Taiping but they complain that much of the work that they should get is done by untrained bedans.

HEALTH VISITING.

A great deal of time is given to the instruction of the parents in our methods and routine, this in their homes as well as at the centre—but results come very slowly. However in a good number of cases we have induced mothers to breast feed their babies where their previous children had been brought up on the bottle.

It is difficult to instil our ideals of cleanliness, scientific feeding, clothing and general upbringing of children into a poor coolie whose home is a small inadequate airless room, in which the furnishing and equipment is almost negligible. The most constantly occurring obstacles to progress are :

I. The long rubber tube and the "dummy".
II. Sweetmeats.
III. As far as their structure permits, living rooms in which all possible ventilation is prevented—especially is this condition met with in post-natal cases.

Now that a second Health Visitor has been appointed to Taiping it is becoming possible to cope more satisfactorily with the visiting in the homes and thus, besides keeping the children under more strict observation, maintain the interest of the parents in the Infant Welfare Work.

Consultation at Port Weld are being held twice a month and continue to be well attended. It will be more satisfactory when these cases can be brought in to the centre, as will be possible when a motor-bus is obtained.

EXHIBITION.

An elementary but comprehensive welfare exhibition was held at the Agri-Horticultural Show in Taiping on August 14th and 15th.

The show-room was constantly crowded, chiefly with Malays, all very interested and anxious to be instructed. Many of the Malays would have liked their families to attend the Welfare Centre regularly but the distance to their homes and the expense of transport is too great for them to do so.

Of the exhibits shown, some were kindly lent by the Ipoh Welfare Centre and others were obtained locally. Several of the Nurses from the General Hospital gave up their spare time to help at the exhibition and it was thus possible to give a continuous series of little lectures, demonstrations and explanations in all the necessary languages.

CHANGES IN STAFF.

Mrs. Bentinck left on transfer on June 16th.

I assumed duty on June 16th.

An untrained Health Visitor Chan Cheng Swah left on March 23rd.

Nurse Pung Seh Moy commenced duty as Health Visitor on November 1st.

EVELYN B. JACQUES,
Lady Medical Officer,
Infant Welfare Centre, Taiping.

RECORD OF ATTENDANCES.

Infant Welfare Centre, Taiping.

1926.	Infants up to 5 years.	Children 5-14 years.	Women.	Total.	Health visiting total.	Weight.	Cases sent to hospital.
January	845	162	178	1,185	461	67	18
February	610	194	180	984	442	44	5
March	919	216	206	1,341	584	47	7
April	581	275	164	1,020	217	28	2
May	684	330	164	1,178	250	32	7
June	810	287	202	1,299	231	32	3
July	804	122	223	1,149	299	—	—
August	700	148	170	1,018	272	—	—
September	751	103	240	1,094	310	—	—
October	681	113	180	974	306	—	—
November	785	106	182	1,073	509	—	—
December	876	145	223	1,244	510	—	—
Total	9,046	2,201	2,312	13,559	4,391	250	42
					Total	292	
					Grand Total of work	18,242	

Cases by Nationalities.

1926.	Chinese.	Tamils.	Malays.	Others.	Total.
January	984	136	437	111	1,668
February	897	381	99	27	1,404
March	1,263	471	133	75	1,942
April	917	403	99	27	1,446
May	1,044	355	137	37	1,573
June	949	327	134	41	1,451
July	886	436	99	27	1,448
August	863	314	87	26	1,290
September	885	339	144	36	1,404
October	839	280	124	37	1,280
November	1,051	401	105	25	1,582
December	1,045	437	213	59	1,754
Total	11,623	4,280	1,811	528	18,242

(1) Ante-natal clinic		135
(2) Babies on register		520
(3) Babies weighed—		
January		504
February		290
March		507
April		338
May		266
June		367
July		465
August		351
September		405
October		414
November		468
December		393
	Total ...	4,768
(4) Health Visiting—		
Primary visits		754
Subsequent visits to children under 1 year		2,718
Visits to children aged 1-5		791
Visits to ante-natal cases		128
	Total ...	4,391

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